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22 October 2018

Mr. Kenneth Shewmake
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1445 Ross Avenue, Suite 1200
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RE: Conceptual Site Model Technical Memorandum, Revision 00
Remedial Investigation
Lane Plating Works, Inc. Superfund Site
Dallas, Dallas County, Texas
Remedial Action Contract 2
Contract: EP-W-06-004
Task Order: 68HE0618F0309

EA Engineering, Science, and Technology, Inc., PBC (EA) is enclosing one hard copy and two electronic copies on compact disc (CD) of the Revision 00 Conceptual Site Model Technical Memorandum (CSMTM) for the above-referenced Task Order. One electronic copy (on CD) has also been submitted to Ms. Rebecca Storms, Texas Commission on Environmental Quality Project Manager. An electronic copy of the Revision 00 CSMTM was also submitted to EPA via email on 22 October 2018.

Please do not hesitate to contact me at (972) 315-3922 if you have any questions.

Sincerely,

Mark Paddock
Project Manager

Enclosure

cc: Brian Delaney, EPA Contract Officer (letter only)
William G. Johnson Jr., EPA Project Officer (letter only)
Rebecca Storms TCEQ Project Manager (one electronic copy on CD)
Tim Startz, EA Program Manager (letter only)
File



**Conceptual Site Model
Technical Memorandum
Remedial Investigation**

**Lane Plating Works, Inc. Superfund Site
Dallas, Dallas County, Texas
EPA Identification No. TXN000605240**

**Remedial Action Contract 2 Full Service
Contract: EP-W-006-004
Task Order: 68HE0618F0309**

Prepared for

U.S. Environmental Protection Agency
Region 6
1445 Ross Avenue
Dallas, Texas 75202-2733

Prepared by

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Revision: 00
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LIST OF ACRONYMS AND ABBREVIATIONS

bgs	Below ground surface
BTAG	U.S. Army Biological Technical Assistance Group
CHPPM	U.S. Army Center for Health Promotion and Preventive Medicine
CFR	Code of Federal Regulations
COPC	Chemical of Potential Concern
CSM	Conceptual Site Model
EA	EA Engineering, Science, and Technology, Inc. PBC
EPA	U.S. Environmental Protection Agency
HWTB	Hazardous Waste Treatment Building
In.	Inch(es)
MCL	Maximum Contaminant Level
mg/kg	milligram per kilogram
NRCS	Natural Resources Conservation Service
PWS	Public Water Supply
RI	Remedial Investigation
RSL	Regional Screening Level
SCDM	Superfund Chemical Data Matrix
site	Lane Plating Works, Inc. Superfund Site
TCEQ	Texas Commission on Environmental Quality
TXDWW	Texas Drinking Water Watch
USDA	U.S. Department of Agriculture
Weston	Weston Solutions, Inc.

1. INTRODUCTION

EA Engineering, Science, and Technology, Inc. PBC (EA) has been authorized by the U.S. Environmental Protection Agency (EPA), under Remedial Action Contract No. EP-W-006-004, Task Order 68HE0618F0309, to conduct a Remedial Investigation (RI) at the Lane Plating Works, Inc. Superfund Site (site). EA has prepared this Conceptual Site Model (CSM) Technical Memorandum in accordance with: (1) specifications provided in the EPA Statement of Work (EPA 2018a), (2) the 5 September 2018 EPA response to EA Questions on the SOW, (3) a scoping meeting held via teleconference call on 6 September 2018, and (4) the EPA-approved EA Work Plan (EA 2018).

1.1 PURPOSE

The purpose of the CSM is to answer the principal study questions outlined below:

- What are the possible sources for contamination?
- What is the nature and extent of contamination?
- What are the potential migration pathways for transport of these contaminants?
- Are there complete pathways from areas of contamination to human and ecological receptors?
- What is the potential risk to human health and ecological receptors from exposure to site related chemicals of potential concern (COPCs)?

Principal study questions are used as a part of the Data Quality Objectives process to ensure the goal of the study has been met with defensible products and decisions (EPA 2006). The principal study questions above will be used in development of the Sampling and Analysis Plan.

1.2 SCOPE

The scope of the CSM includes the following:


- Reviewing existing reports
- Compiling the data sets into a single cogent presentation
- Evaluating the site geology and hydrogeology, with definition of the various water-bearing zones
- Detailing the CSM that: (1) describes the source of contamination, (2) describes the nature and extent of contamination, (3) identifies the primary migration transport

pathways, (4) identifies likely human health and ecological exposure pathways, and (5) identifies data gaps.

2. BACKGROUND

The site background information presented in this section has been adapted from the January 2018 Hazardous Ranking System Documentation Record (EPA 2018b) and the August 2018 EPA SOW (EPA 2018a).

The site was occupied by a former electroplating facility that conducted primarily hard chromium and cadmium plating for approximately 90 years, until 2015 (EPA 2018b). The site includes four main source areas: (1) contaminated soil currently located underneath and surrounding the facility building, (2) underground sumps located inside the facility building, (3) wastes containerized in tanks and other containers, and (4) wastes containerized in drums (EPA 2018b). These areas have contributed to releases of chromium, copper, cyanide, lead, manganese, mercury, nickel, and zinc to the terrestrial environment in the vicinity of the site facility and to small streams and associated wetlands, making surface water a suspected pathway (EPA 2018b). Therefore, human and ecological receptors are potentially at risk at the site facility as well as downgradient from the site.

Stream 5A2, is located approximately 450 feet east of the facility and flows south into a small pond located southeast of the facility (EPA 2018b). Site and area topography slope gently to the south and southeast (EPA 2018b). Surface water runoff follows two primary overland segments: (1) east along the north side of the facility building and then due south for approximately 500 feet before reaching a wetland, and (2) southeast of the facility across a field for approximately 400 feet before reaching a small pond and Stream 5A2 (EPA 2018b). Stream 5A2 flows south from the small pond for approximately 300 feet before joining an unnamed stream. The merged stream flows east and eventually discharges into the Trinity River (EPA 2018b). 

The surface water migration is a concern as there are fisheries located in the Joppa Preserve/Lemmon Lake Park and Trinity River (habitat known to be used by the state-designated endangered or threatened wood stork), white-faced ibis are located in the Joppa Preserve/Lemmon Lake Park, and freshwater forested/shrub wetlands are located in the Joppa Preserve/Lemmon Lake Park, along the Trinity River, and in the general site vicinity.

Cyanide, lead, mercury, chromium, and hexavalent chromium have been identified as COPCs impacting onsite soils, underlying ground water, and sediments downstream from the site. Contaminant levels in onsite soils exceed the EPA Regional Screening Levels (RSLs) for residential and industrial use (EPA 2018c).

2.1 SITE DESCRIPTION

The site is located at 5322 Bonnie View Road, approximately five miles south of downtown Dallas, Dallas County, Texas (EPA 2018b) (Figure 1). It is situated immediately east of Bonnie

View Road on 4.6 acres and is surrounded on all sides by open or wooded land (EPA 2018b). Land use is listed as residential and commercial in the area (EPA 2018b). The original facility building and adjacent structures are still present and include the main facility building where the majority of electroplating operations took place, a shed structure known as the Hazardous Waste Treatment Building (HWTB), a former wastewater treatment building, miscellaneous tractor trailers located south of the facility, and the HWTB (EPA 2018b). A barbed wire and locked chain-link fence surrounds the property. A facility layout map is provided as Figure 2.

Asphalt/concrete cover extends from the facility entrance to the driveway and footprint around the facility building. Soil and vegetation are exposed on all other sides (EPA 2018b). Two old, unused water wells are located on the north side of the facility building (EPA 2018b). Old equipment and trash surround the facility in open and wooded areas located to the east and south (EPA 2018b). According to the Dallas Central Appraisal District, the office building was built in 1950, and the facility property is currently owned by Stag Management, Inc., with John R. Lane listed as president (EPA 2018b). Stag Management, Inc. also owns the adjoining property located east of the facility at 5156 Bonnie View Road, and the Lane residence is located approximately 500 feet north of the facility (EPA 2018b). Bankruptcy schedules show that Lane Plating Works, Inc. owns equipment and accounts receivables and leases the 5322 Bonnie View Road property from Stag Management, Inc. (EPA 2018b). The closest residences are located approximately 200 to 300 feet west of the facility along Bonnie View Road, and a baseball diamond is located approximately 650 feet south of the facility. There are no daycare facilities, schools, or churches located within 200 feet of the facility (EPA 2018b).

2.2 SITE HISTORY AND PREVIOUS INVESTIGATIONS

The site was occupied by a former electroplating facility that conducted primarily hard chromium and cadmium plating for approximately 90 years, until 2015 (EPA 2018b). Additional processes included chromate dips, chromic acid anodize, hard chrome plating using chromic acid, cadmium plating, copper plating using copper cyanide, zinc plating aluminum using nitric acid and zinc cyanide, nickel plating using nickel sulfate, black oxide coating, electroless nickel, passivation, machining and grinding, stripping of metal parts in acid, pretreatment of metal parts using sodium hydroxide and sulfuric acid, operating a lead melting pot to repair anodes used in plating baths, and electroplating wastewater treatment (EPA 2018b). Resource Conservation and Recovery Act and Texas Commission on Environmental Quality (TCEQ) Notice of Registration records document the following waste streams: corrosive and reactive waste, cadmium, chromium, lead, spent chromic acid solution, spent muriatic acid, chromate, metals filings and dust, cyanide waste, caustic waste, caustic soda solid (tank bottoms), and wastewater treatment sludges from electroplating operations (EPA 2018b). Operations ceased in 2015 with numerous violations, investigations, and bankruptcy (EPA 2018b).

The site has been investigated by several state and federal agencies over the past 40 years, and releases of plating wastes to on-site soils have been documented by recent investigations (EPA 2018b). TCEQ conducted investigations at the site in February 2010 and January 2011. Analytical results from soil samples collected from a waste pile and around the facility

foundation indicated leachable cadmium, chromium, lead, and mercury concentrations (EPA 2018b). Formal enforcement action was requested based on numerous violations, including the failure to obtain a permit prior to disposal of hazardous waste and to prevent unauthorized discharge of industrial solid waste (EPA 2018b). A Notice of Enforcement letter and a Proposed Agreed Order were transmitted to the facility in April and July 2011, respectively, with a total penalty of \$28,350 (EPA 2018b). TCEQ conducted a follow-up investigation in October 2014 and noted several additional issues and alleged violations of waste management, including the failure to install a secondary containment unit for a hazardous waste tank (EPA 2018b). Onsite soil samples indicated total chromium, hexavalent chromium, antimony, arsenic, cadmium, mercury, and nickel detections above the EPA Superfund Chemical Data Matrix (SCDM) soil exposure pathway benchmarks, and lead above the EPA interim screening level (EPA 2018b).

The Department of Labor Occupational Safety and Health Administration issued \$110,200 of proposed penalties to the facility in January 2015 based on inspections made in 2014. Violations were related to the upkeep, use, and provision of required safety equipment and training for employees, in addition to proper storage and disposal of chemicals. Specific violations of note included storing sodium hydroxide together with sulfuric acid and exposing employees to hexavalent chromium (EPA 2018b). Violations documented hexavalent chromium on surfaces inside the facility building (EPA 2018b). A second Notice of Enforcement letter was transmitted to the facility in March 2015 (EPA 2018b).

TCEQ conducted an investigation in November 2015 to determine if conditions posed an immediate threat to nearby residents and if grinding grit had spread off of the facility property (EPA 2018b). Grinding grit was observed on the ground surface south and southeast of the HWTB (EPA 2018b). Leaks, openings in the walls, and yellow stains believed to be chromium were observed in the facility building (EPA 2018b). Yellow stains were additionally observed on the west side of the facility building on the exterior southeast corner (EPA 2018b). Soil samples were collected from the southern boundary of the property at a depth of 0-3 inches (in.) below ground surface (bgs) (EPA 2018b). Antimony, arsenic, cadmium, chromium, and mercury were detected above SCDM soil exposure pathway benchmarks, and lead was detected above the screening level (EPA 2018b).

TCEQ conducted a limited removal action in November and December 2015 (EPA 2018b). The scope of work included hazard characterization analysis/chemical characterization of chemicals in the facility lab, lab pack and re-packaging of select chemicals, the removal of chromic acid sludge from two sumps at the facility, and securing the chromic acid waste into poly totes. All outside doors to the facility building were secured and locked, and metal cattle panels were used to secure the first floor windows (EPA 2018b). As State enforcement was exhausted, TCEQ referred the site to the EPA Region 6 Superfund Program for further evaluation (EPA 2018b).

Representatives from the TCEQ and EPA Superfund Removals program conducted a facility visit in February 2016 and observed incompatible wastes stored together, staining, visibly impacted soils, wastes appearing to seep underneath the facility foundation, and large volumes of hazardous wastes (EPA 2018b). Grab samples collected by TCEQ from the two shallow facility water wells in February 2016 contained concentrations of chromium and hexavalent chromium

above SCDM ground water pathway benchmarks and the Maximum Contaminant Level (MCL) (EPA 2018b).

TCEQ performed a Site Inspection sampling event in July 2016 to evaluate the surface water pathway (TCEQ 2017). Antimony, cadmium, chromium, copper, lead, mercury, nickel, and zinc were detected at elevated concentrations in soil along the overland segments at depths up to six to eight in. bgs. Of these, arsenic, cadmium, chromium, and mercury were detected above SCDM soil exposure pathway benchmarks, and lead was detected above the screening level in soil (EPA 2018b). Chromium, cyanide, lead, and mercury in sediment at depths of 0-6 or 6-12 in. bgs, and aluminum, arsenic, chromium, copper, iron, lead, manganese, mercury, nickel, and zinc in surface water were detected at elevated concentrations in the surface water pathway. Of these, aluminum, copper, iron, lead, and zinc were detected above SCDM surface water pathway environmental benchmarks (chronic, fresh criteria continuous concentration) (EPA 2018b).

In March 2016, the EPA Emergency Management Branch tasked an EPA Region 6 Superfund Technical Assessment Response Team (START-3) contractor, to perform a Removal Assessment at the site. A two-phase Removal Assessment was conducted at the site in April and September 2016 (EPA 2018b). Excessive chromium staining on the floor and small pools of plating wastes from ongoing releases were observed in the facility building, in addition to chromium staining on the outside of the building from past spills and releases (EPA 2018b).

During the April 2016 assessment activities, composite five-point soil sampling was conducted within thirty-seven 50 by 50 foot grids along the exterior of the facility. Within each grid, sample aliquots were collected from each corner and from the center of the grid at a depth of 0 to 6 in. bgs. The aliquots were then combined and containerized as a composite sample. Five biased grab soil samples were collected by the EPA Team in areas previously identified by TCEQ to have elevated concentrations of lead and chromium along the southeastern part of the site. A total of 36 soil samples and 4 liquid waste samples were collected to determine the nature and extent of site-related, hazardous constituents associated with electroplating waste (plating waste) in onsite soils. Liquid waste samples were used to verify if liquids, contained in an unknown number of drums and totes, were considered hazardous substances. Soil samples were submitted for analysis of metals and hexavalent chromium (Cr VI). Soil analytical data was compared to the May 2016 EPA RSLs for industrial use. The liquid waste characterization results were compared to 40 Code of Federal Regulations (CFR) Part 261. Based on the analytical results, hexavalent chromium, lead, and mercury contaminated soil was present around the footprint of the building. Hexavalent chromium was reported in 17 grids exceeding the EPA industrial RSL of 6.3 milligrams per kilogram (mg/kg). Hexavalent chromium contaminated soil ranged in concentration from 167 mg/kg to 5,620 mg/kg. Lead exceeded the EPA RSL of 800 mg/kg in six grids. Mercury was observed above instrument detection limits in several grids but only exceeded in one grid above the EPA RSL of 46 mg/kg (EPA 2018b).

During the September 2016 assessment activities, composite five point soil samples were collected from within approximately seventy-two 50 by 50 foot grids. Samples were collected at three depth intervals: 0 to 6 in. bgs, 6 to 12 in. bgs, and 12 to 18 in. bgs. Soil samples were

submitted for analysis of metals and hexavalent chromium. A total 216 samples (192 normal, 20 duplicate, and 4 equipment blanks) were collected during this sampling event. Samples collected at the 6 to 12 in. interval were placed on hold pending analytical results from the 0 to 6 in. and 12 to 18 in. intervals. Based on the analytical results, hexavalent chromium, lead, and mercury contaminated soil was present around the footprint of the building. Hexavalent chromium was reported in three grids exceeding the May 2016 EPA industrial RSL of 6.3 mg/kg. Hexavalent chromium contaminated soil ranged in concentration from 9.69 mg/kg to 203 mg/kg. Lead exceeded the EPA RSL of 800 mg/kg in one grid at a concentration of 3740 mg/kg. Mercury was reported in two grids exceeding the EPA RSL of 46 mg/kg, ranging from 46.2 mg/kg to 77.8 mg/kg (EPA 2018b).

Samples of chromic acid waste collected during the 2016 Removal Assessment activities were confirmed to be hazardous (EPA 2018b). Hazardous characterization identification of waste containers was performed, and remaining vats and sumps were pumped and transferred into compatible containers (EPA 2018b). Waste containers were transported from the facility to authorized facilities for final disposal in November 2016 (EPA 2018b). The following waste streams were identified: cyanide solution and solids, chromic acid and chromic acid sludges/solids, sulfuric acid, flammable aerosol and liquids, acid solids and liquids, neutral solids and liquids, elemental mercury, caustic solids and liquids, and soil (Weston Solutions, Inc. [Weston] 2016). *In situ* contaminated soils currently remain in place and will be investigated further as part of this RI.

In May 2018, the site was placed on the National Priorities List.

3. SITE CHARACTERISTICS

This preliminary site characterization summary will be revised as new information develops and details can be refined.


3.1 SURFACE FEATURES

As discussed in Section 2, the original facility building and adjacent structures are still present and include the main facility building where the majority of electroplating operations took place, a shed structure known as the HWTB, and a former wastewater treatment building and miscellaneous tractor trailers located south of the facility and HWTB. A barbed wire and locked chain-link fence surrounds the property. Asphalt/concrete cover extends from the facility entrance to the driveway and footprint around the facility building. Two old, unused water wells are located on the north side of the facility building. Old equipment and trash surround the facility in open and wooded areas located to the east and south (EPA 2018b).

The closest residences are located approximately 200 to 300 feet west of the facility along Bonnie View Road, and a baseball diamond is located approximately 650 feet south of the facility. No daycare facilities, schools, or churches have been documented within 200 feet of the facility. The primary receptors near the site consist of small nearby streams and associated

wetlands. An unnamed stream, referred to as Stream 5A2, is located approximately 450 feet east of the facility and flows south into a small pond located southeast of the facility (EPA 2018b).

3.2 DEMOGRAPHICS

The U.S. Census Bureau American Fact Finder website, which is available at the following link: https://factfinder.census.gov/faces/nav/jsf/pages/community_facts.xhtml, contained 2010 census data for Dallas, Texas. This source indicated that in 2010, the population of Dallas, Texas, was 1,197,816. There were 516,639 households with 449,597 occupied units, and 65.4 percent of these units were occupied by two or more persons per household. The population was 50.7 percent Caucasian, 42.4 percent Hispanic, and 25 percent African-American. The median household income was estimated to be \$41,682. This data also estimated that 22.3 percent of the individuals in Dallas, Texas, have an income below the poverty level 

3.3 METEOROLOGY AND CLIMATE


In Dallas County, Texas, summers are hot and winters are cool as a result of the occasional surges of cold air, which cause the otherwise mild temperatures to drop. The average winter temperature is 48 °F, and the average daily minimum temperature is 38°F. In summer, the average temperature is 84°F, and the average daily maximum temperature is 94°F (U.S. Department of Agriculture [USDA] 1980).

The total average annual precipitation is 36 in. Of this, 20 in., or 57 percent, usually falls in April through September, which includes the growing season for most crops. In 2 years out of 10, the rainfall in April through September is less than 15 in. Thunderstorms occur on about 40 days each year, and most occur in the spring. Average seasonal snowfall is 2 in. (USDA 1980).

The average relative humidity in midafternoon is about 55 percent. Humidity is higher at night, and the average at dawn is about 79 percent. The sun shines 75 percent of the time possible in summer and 55 percent in winter. The prevailing wind is from the south. Average wind speed is highest, 13 miles per hour, in April. Tornadoes and severe thunderstorms occur occasionally. These storms are local and of short duration. Damage is variable and spotty.

The climate of the site is classified as humid subtropical, based on the Köppen-Geiger climate classification system (Kottek et al. 2006).

3.4 LAND USE

Dallas County has a total area of 902 square miles, or 577,280 acres. As of 1980, about 25 percent of the county was cropland, and 46 percent of the county was used for urban development (USDA 1980 ). As indicated in Section 2.1, land use in the vicinity of the site is a mixture of residential and commercial development (EPA 2018b), with undeveloped plots of land situated to the east, south, and west of the site.

3.5 SOILS

Information in this section was gathered from the USDA Soil Survey of Dallas County, Texas (USDA 1980) and Natural Resource Conservation Service (NRCS) Web Soil Survey for Dallas County (NRCS 2018). There are three different soil units encompassing the site. Of the three units, the majority of the site is underlain by the Lewisville-Urban land complex, 0 to 4 percent slopes (Soil unit 49). Frio-Urban Land complex, frequently flooded (Soil Unit 38), underlies the southwest portion of the site; while Frio-silty clay, 0 to 1 percent slopes, frequently flooded (Soil Unit 37), lies beneath the southeast portion of the site.

3.5.1 Lewisville-Urban Land Complex, 0 to 4 Percent Slopes

The dominant soil type beneath the developed portion of the site is Lewisville-Urban land Complex, which is characterized by slopes of 0 to 4 percent. This complex is made up of deep, well drained, nearly level and gently sloping soils and areas of urban land. The Lewisville soil makes up about 55 percent of this complex, and urban land, which consists of areas covered with buildings and pavement, makes up 30 percent. Minor soils make up the rest. In many places, the soil has been altered by excavation, cutting and filling, and land leveling.

Typically, the surface layer of the Lewisville soil is moderately alkaline, dark grayish brown silty clay 17 in. thick. To a depth of 27 in., the soil is moderately alkaline, and grayish brown silty clay. To a depth of 42 in., the soil is moderately alkaline, and light yellowish brown silty clay. To a depth of 55 in., the soil is moderately alkaline and light brownish gray silty clay that has brownish mottles. To a depth of 75 inches, the soil is moderately alkaline and light yellowish brown silty clay that has fine, gray and brown mottles. Permeability is moderate, and the available water capacity is high. Runoff is slow to medium, and the hazard of erosion is moderate.

3.5.2 Frio-Urban Land complex, Frequently Flooded

Located beneath the southwest portion of the site, in association with the unnamed creek drainage system located south of the site, this soil unit is made up of deep, nearly level, well drained soils and areas of urban land on the flood plains of small streams.

The Frio soil makes up about 70 percent of this complex, and urban land, which consists of areas covered with buildings and pavement, makes up 15 percent. The rest of the area consists of minor soils. In some areas, fill material consisting of clay, broken concrete, and pavement has been stacked or spread 2 to 4 feet deep on the surface.

Typically, the surface layer of the Frio soil is moderately alkaline, dark grayish brown silty clay 7 in. thick. To a depth of 53 in., the soil is moderately alkaline, very dark grayish brown silty clay. To a depth of 74 in., it is moderately alkaline, brown silty clay loam. Permeability is moderately slow, and the available water capacity is high. Runoff is slow, and the hazard of erosion is slight.


The Frio soil has low potential for urban uses because of the hazard of flooding. In most areas of this complex, however, levees have been constructed to prevent damage by floods. Other limitations to urban uses are the low strength and corrosivity of the soil. The Frio soil has low potential for recreation uses because of the hazard of flooding and the clayey surface texture. Some areas of this complex are used as greenbelts or open space as well as for city parks.

3.5.3 Frio-Silty Clay, 0 to 1 Percent Slopes, Frequently Flooded

Located beneath the southeast portion of the site, this is a deep, well drained, nearly level soil located on flood plains. This soil generally is flooded one or more times each year. The floodwaters are shallow, and the floods are of brief duration.

Typically, the surface layer is moderately alkaline, dark grayish brown silty clay 7 in. thick. To a depth of 46 in., the soil is moderately alkaline, very dark grayish brown silty clay. To a depth of 74 in., it is moderately alkaline, brown silty clay loam.

Permeability is moderately slow, and the available water capacity is high. Runoff is slow, and the hazard of erosion is slight. This soil is used mainly as pasture, for which it has high potential. It is well suited to improved Bermuda grass. This soil is not suited to use as cropland because of the frequent flooding.

This soil has very low potential for urban uses because of the frequent flooding and the low strength and corrosivity of the soil. It is limited for recreation uses by the hazard of flooding and the clayey surface texture .

3.6 SURFACE WATER

The information provided in this section was adapted from the May 2016 Preliminary Assessment Report, which was Prepared by TCEQ, in cooperation with EPA Region 6 (TCEQ 2016).

The site is bordered by Bonnie View Road to the west, which is slightly elevated from the site and creates a high ridge on the west side of the baseball diamond, located south of the site. Five Mile Creek is located approximately 0.3 miles to the south of the site and discharges into the Trinity River. An unnamed creek flows underneath Bonnie View Road approximately 500 to 1,000 feet south/southeast of the site and is situated north of the baseball diamond and south of the site. A secondary stream, referred to as Stream 5A2 in the Dallas County Storm Water Infrastructure Assessment, is located approximately 500 to 600 feet east of the site. A small pond is located approximately 500 feet southeast of the site (Figure 2).

The site and area topography slope gently to the south and southeast. The Preliminary Assessment site visit was reportedly made one day after a storm event while site conditions were still wet. A low depression filled with rain water was observed along the south fence line of the site near Bonnie View Road. Water drainage and site runoff were observed flowing adjacent north of the facility building towards the east and then along the east side of the facility building

to the south. Runoff was observed to continue south through a low depression/ponding area towards the unnamed creek.

Stream 5A2 crosses Bonnie View Road at a location northwest of the site and south of Stag Road, and then continues south on a pathway that flows east of the facility building into the northeast corner of the small pond. This stream was observed exiting the southwest corner of the pond, continuing south until it connected to site drainage coming from the east side of the facility building into the unnamed creek. Trash was observed collecting in the drainage out of the pond to the south. Stream 5A2 continues to flow past the small pond towards the east/southeast and eventually merges with the unnamed creek to the east. A field located west of the small pond was saturated and appears to collect drained water in the area.

Five Mile Creek is listed as an intermittent, unclassified freshwater stream (Segment 0805D) that flows into the perennial Upper Trinity River (Segment 0805) at a point approximately 0.25 miles north of Interstate 20. Five Mile Creek forms a dendritic drainage pattern and has been channelized east of Interstate 35 and re-routed. It is the main tributary to the Trinity River in the site vicinity and capable of flooding the site and connecting with the unnamed creek and Stream 5A2 during storm events.

Although the unnamed creek is likely intermittent and may connect to Five Mile Creek during flood events, a connection upstream to the west of the site with Five Mile Creek is not clear. The braided pattern and dendritic drainage of Five Mile Creek and Stream 5A2 make the surface water pathway uncertain.

The unnamed creek appears to flow east and connect with Stream 5A2, continuing to the east in a braided stream pattern across Interstate 45 into a small ditch towards Highway 310 and across. The channelized stream in this section was redone in 2008 to 2009 when the Trinity Forest Trail was constructed to bypass Lemmon Lake in the Joppa Preserve, and now apparently connects directly to the Trinity River. The apparent course of the stream from the site towards the Trinity River is approximately two miles.

The site and the section of Stream 5A2 located east of the site are situated within the Special Flood Hazard Area subject to inundation by the one percent annual chance flood, also known as the 100-year flood or base flood area. Five Mile Creek is situated in the regulatory floodway, which is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so the one percent annual chance flood can be carried without substantial increases in flood heights.

The two-year, 24-hour rainfall for the site is 3.5 to 4.5 inches. The average flow rate of the Upper Trinity River near Lemmon Lake is 3,570 cubic feet per second over a 56 year record, with a 2015 annual average flow of 5,665 cubic feet per second. Flow rates have not been located for Five Mile Creek.

3.7 GROUND WATER

The information provided in this section has been adapted from the May 2016 Preliminary Assessment Report, which was Prepared by TCEQ in cooperation with EPA Region 6 (TCEQ 2016).

The site overlies the Quaternary alluvium and Pleistocene fluviatile terrace deposits and the Austin Chalk. The Quaternary alluvium and Pleistocene fluviatile terrace deposits are generally irregular in thickness and extent in close proximity to the site, as well as along Five Mile Creek and the Trinity River to the east of the site. Several nearby ground water monitoring wells are installed to the northwest, northeast, and east of the site to an average depth of 40 feet bgs. These monitoring wells are completed in the unconfined alluvium and terrace deposits, with static water levels around 10 feet bgs. Ground water gradient information is not available for the shallow aquifer. Hydraulic conductivity is low in the Austin Chalk, which is very limited as an aquifer. The Woodbine Aquifer and Twin Mountains Formation of the Trinity Aquifer are also present below the site, based on area well drilling logs.

Underlying the Austin Chalk is the Eagle Ford Group. The 200 to 300 foot thick Eagle Ford Group unconformably overlies the Woodbine Aquifer and acts as a confining unit. The Woodbine Aquifer is categorized by the Texas Water Development Board as a minor aquifer consisting of sandstone interbedded with shale and clay that form three distinct water-bearing zones. The Woodbine Aquifer occurs from approximately 700 to 1,100 feet bgs and reaches 600 to 700 feet in thickness in subsurface areas, with freshwater saturated thickness averages of about 160 feet. Based on area well drilling logs, water levels in the Woodbine Aquifer in the vicinity of the site ranges from 100 to 230 feet bgs, with total depths of approximately 853 to 1,100 feet bgs. Ground water gradient in the Woodbine Aquifer is generally to the east-southeast.

The Washita Group underlies the Woodbine and overlies the Fredericksburg Group. The two groups are generally considered a confining unit above the Trinity Aquifer and yield only small amounts of water. The two water-bearing formations of the Trinity Group in the vicinity of the site are the Paluxy and Twin Mountains Formations, separated by the Glen Rose Formation. The Glen Rose Formation only yields small amounts of water to localized areas.

The top of the Paluxy Formation occurs from approximately 1,700 to 2,000 feet bgs, with a maximum thickness of approximately 400 feet. The Paluxy Formation yields small to moderate quantities of fresh to slightly saline water to municipal, industrial, domestic, and livestock wells. The Twin Mountains Formation has a maximum thickness of up to 1,000 feet, and the top of the formation occurs from approximately 2,300 to 2,800 feet bgs. It is the primary Cretaceous-age water-bearing formation in the region and yields moderate to large quantities of fresh to slightly saline water to municipal and industrial wells. Ground water gradient in both aquifers is generally to the east. The Trinity is the largest and most prolific aquifer in the region; however, the aquifer has been overdeveloped, resulting in significant water level declines across the region.

The unconfined alluvium, Woodbine Aquifer, and Paluxy Formation of the Trinity Aquifer are unlikely to have interconnectivity in this area as the three aquifers are separated from one another by confining units of the Eagle Ford and Washita/Fredericksburg Groups, as discussed earlier in this section. Interconnectivity between the Paluxy and Twin Mountains Formations of the Trinity Aquifer is also unlikely in the vicinity of the site as they are separated by the Glen Rose Formation, which yields small amounts of water. Additionally, the upper part of the Twin Mountains Formation is mostly claystone, and few wells are developed in the upper part of the formation. The Glen Rose Formation pinches out towards the north and is absent in northern Texas counties where the Paluxy and Twin Mountains Formations coalesce into the Antlers Formation.

The Trinity Aquifer supplies wells for public supply, industrial, irrigation, domestic, and livestock use. Irrigation use constitutes a small portion of overall pumpage in the Paluxy and Twin Mountains Formations and is generally limited to irrigation of golf courses and lawns. Irrigation of crops from the Twin Mountains Formation is confined to the outcrop areas located in Hood, Parker, and Wise Counties. Approximately 55 percent of total ground water use in the Twin Mountains Formation is for municipal and industrial purposes. Municipal and domestic use of the Paluxy Formation accounted for approximately 50 and 24 percent of total ground water pumpage, respectively. There is no evidence at this time that ground water is used for irrigation of food or forage crops of five or more acres, for commercial livestock watering, as an ingredient in commercial food preparation, for commercial aquaculture, or for major or designated recreation in close proximity to the site.

Based on information provide in the 2016 Preliminary Assessment, one domestic well, three public water supply (PWS) wells, two stock wells, eight irrigation wells, and seven industrial wells lie within four miles of the site. The only well located within a mile of the site is an irrigation well. Additional irrigation wells are located within two miles to the northeast and southwest (three wells), within three miles to the east and west (three wells), and within four miles northeast. The nearest PWS wells are located within two, three, and four miles west and southwest of the site and are screened in the Woodbine Aquifer. The closest domestic well is located within three miles east of the site, and two stock wells are located within three and four miles east of the site, all screened within shallow alluvium. Industrial wells are situated within two miles east-northeast (two wells) and four miles north (five wells) of the site. Irrigation and industrial wells within four miles of the site are screened in the shallow alluvium and Woodbine Aquifer (EPA 2018b).

Water analytical results were not available for the domestic and PWS wells identified in the search. The TCEQ Texas Drinking Water Watch (TXDWW) website lists one of the PWS facilities (Community Water Service Grand Prairie) as buying their water from the City of Grand Prairie, which buys from the Cities of Fort Worth and Midlothian and the Dallas Water Utility. These are all surface water sources of drinking water located west or north of the site. The other PWS facilities are not listed on the TXDWW website. Installation dates of the domestic and PWS wells are old, ranging from the 1940s to the 1970s, and it is unknown if these wells are still in use.

There are two onsite shallow wells of unknown historical use located adjacent north of the facility building (Figure 2). These onsite wells were sampled in February 2016 for metals, and WW-1 displayed chromium and hexavalent chromium concentrations that exceeded the MCL and SCDM for these metals while WW-2 had a hexavalent chromium concentration that exceeded the SCDM. The site is not located within a wellhead protection area.

3.8 GEOLOGY

The information provided in this section was adapted from the May 2016 Preliminary Assessment Report, which was Prepared by TCEQ, in cooperation with EPA Region 6 (TCEQ 2016).

The site is underlain by Quaternary alluvium and Pleistocene fluviatile terrace deposits. The Quaternary alluvium is comprised of flood plain deposits of gravel, sand, silt, silty clay, and organic matter. Fluviatile terrace deposits consist of gravel, sand, silt, and clay in contiguous terraces. These deposits range in thickness from approximately zero to 75 feet bgs. The Quaternary sediments are underlain by the Cretaceous-age Austin Chalk. The upper and lower parts of the Austin Chalk consist of mostly massive microgranular calcite and some interbeds and partings of calcareous clay, with thin bentonitic beds locally in the lower part. The middle part of the Austin Chalk is mostly thin-bedded marl with interbeds of massive chalk. The Austin Chalk has a thickness of approximately 300 to 500 feet.

Underlying the Austin Chalk is the Eagle Ford Group of Cretaceous age, which is 200 to 300 feet thick and comprised predominantly of shale with thin beds of limestone and bentonite. The Cretaceous-age Woodbine Formation underlies the Eagle Ford Group. This formation is approximately 175 to 250 feet thick and is composed mostly of sandstone. The Woodbine is underlain by the Cretaceous-age Washita and Fredericksburg Groups, which consist primarily of limestone, dolomite, marl, and shale. The Fredericksburg and Washita Groups have a combined thickness of approximately 1,250 feet and separate the Woodbine from the underlying Paluxy Formation of the Trinity Group. The Paluxy Formation is the upper member of the Trinity Group, approximately 400 feet thick, and is comprised mostly of sand/sandstone and some shale and limestone. The Glen Rose Formation divides the two Trinity Group aquifer formations in the area and consists of limestone, marl, shale, and anhydrite. It can reach thicknesses of up to 1,500 feet. The Twin Mountains Formation, originally named the Travis Peak Formation, consists of sand, silty clay, and siliceous conglomerates of chert, quartzite, and quartz pebbles and has a thickness of up to 1,000 feet.

3.9 ECOLOGICAL SETTING

The information provided in this section was adapted from the May 2016 Preliminary Assessment Report, which was Prepared by TCEQ, in cooperation with EPA Region 6 (TCEQ 2016).

The site property is approximately five acres. Impermeable cover extends from the site entrance off Bonnie View Road up to the driveway and footprint around the facility building. The site

property and adjacent lots are fenced off with barbed-wire fence north and east of the facility building and along the creek and are generally not accessible to the public. The adjacent property lots north and east of the site are prairie habitat, and horses were observed grazing during a site visit in February 2016 (TCEQ 2016). A chain-link fence isolates the site from Bonnie View Road. Parts of the barbed-wire fence are in disrepair along the creek; however, dense vegetation contributes to limiting site access.

South of the facility building there are forested and shrub habitat areas. In the southeast corner of the site, there is freshwater forested/shrub wetland habitat, which is characterized as palustrine, forested, and temporarily flooded. Abundant forested vegetation that may be indicative of this wetland type is discernible and consistent in aerial photos from 1952, 1968, 1982, 1996, and 2007, indicating persistence over several decades. Additionally, the presence of obligate wetland species was confirmed by an ecologist in photos taken from the wetland area located in the site vicinity and downstream from the site. Spikerush (*Eleocharis* sp.), smartweed (*Polygonum* sp.), and alligatorweed (*Alternanthera philoxeroides*) were specifically identified (TCEQ 2016).

The 6,000-acre Great Trinity Forest is the largest urban hardwood forest in the United States and is located approximately two miles east of the site. It follows the Trinity River and contains a mixture of bottomland hardwoods, wetlands, and grasslands, and supports a diverse community of plant and animal species, including bald eagles, wood storks, and ibises. It contains the Joppa Preserve, McCommas Bluff Preserve, and Trinity River Audubon Center. It is not currently listed as a specific preserve area; however, the City of Dallas may develop it for outdoor recreational use in the future.

The 307-acre Joppa Preserve is a major stopping point for migratory water birds, including the endangered white-faced ibis and wood stork. The McCommas Bluff Preserve is 111 acres and is situated along the Trinity River. Trinity River Audubon Center, a 120-acre natural center located in the Great Trinity Forest. The Trinity River Audubon Center is a reclaimed former illegal dump site and serves as a haven for birds and wildlife. Priority birds that are protected in this center include species listed as Species of Greatest Conservation Need for Texas under Texas Parks & Wildlife Department Texas Conservation Plan and/or Climate Threatened or Climate Endangered status based on National Audubon's Climate Initiative. Hardwood forests, pond, wetland, and prairie ecosystems are found within this natural center.

The site is located within the Texas Blackland Prairies ecoregion. The landscape is gently rolling to nearly level, and elevations range from 300 to 800 feet above sea level. Blackland Prairie soils once supported a tallgrass prairie dominated by tall-growing grasses such as big bluestem (*Andropogon gerardi*), little bluestem (*Schizachyrium scoparium*), indiagrass (*Sorghastrum nutans*), and switchgrass (*Panicum virgatum*). Crop production and cattle ranching are the primary agricultural industries (Texas Parks & Wildlife Department 2018a).

3.10 THREATENED AND ENDANGERED SPECIES

The table below presents the list of rare species expected to occur in Dallas County. Species that are state or federally listed as endangered or threatened (Texas Parks & Wildlife Department 2018b) are also noted in the table. It is important to note that these listed species may occur within Dallas County, but there has been no known documentation of any of the species at the site. However, habitat known to be used by the state-designated threatened wood stork and white-faced ibis is located in the Joppa Preserve (approximately 2 miles away from the site) and Lemmon Lake Park (approximately 1.5 miles from the site).

Species	Scientific Name	Federal Status	State Status
Birds			
White-faced Ibis	<i>Plegadis chihi</i>		Threatened
Wood Stork	<i>Mycteria americana</i>		Threatened
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Delisted	Threatened
Peregrine Falcon	<i>Falco peregrinus</i>	Delisted	Threatened
American Peregrine Falcon	<i>Falco peregrinus anatum</i>	Delisted	Threatened
Arctic Peregrine Falcon	<i>Falco peregrinus tundrius</i>	Delisted	
Whooping Crane	<i>Grus americana</i>	Endangered	Endangered
Piping Plover	<i>Charadrius melodus</i>	Threatened	Threatened
Red Knot	<i>Calidris canutus rufa</i>	Threatened	
Interior Least Tern	<i>Sterna antillarum athalassos</i>	Endangered	Endangered
Western Burrowing Owl	<i>Athene cunicularia hypugaea</i>		
Sprague's Pipit	<i>Anthus spragueii</i>		
Black-capped Vireo	<i>Vireo atricapilla</i>	Delisted	Endangered
Golden-cheeked Warbler	<i>Setophaga chrysoparia</i>	Endangered	Endangered
Henslow's Sparrow	<i>Ammodramus henslowii</i>		
Mammals			
Cave myotis	<i>Myotis velifer</i>		
Plains spotted skunk	<i>Spilogale putorius interrupta</i>		

Reptiles			
Alligator snapping turtle	<i>Macrochelys temminckii</i>		Threatened
Texas horned lizard	<i>Phrynosoma cornutum</i>		Threatened
Texas garter snake	<i>Thamnophis sirtalis annectens</i>		
Timber rattlesnake	<i>Crotalus horridus</i>		Threatened
Mollusks			
Texas pigtoe	<i>Fusconaia askewi</i>		Threatened
Sandbank pocketbook	<i>Lampsilis satura</i>		Threatened
Louisiana pigtoe	<i>Pleurobema riddellii</i>		Threatened
Texas heelsplitter	<i>Potamilus amphichaenus</i>		Threatened
Insects			
Black Lordithon rove beetle	<i>Lordithon niger</i>	Endangered	Endangered
Plants			
Plateau milkvine	<i>Matelea edwardsensis</i>		
Tree dodder	<i>Cuscuta exaltata</i>		
Texas milk vetch	<i>Astragalus reflexus</i>		
Hall's prairie clover	<i>Dalea hallii</i>		
Osage Plains false foxglove	<i>Agalinis densiflora</i>		
Glen Rose yucca	<i>Yucca necopina</i>		
Glass Mountains coral-root	<i>Hexalectris nitida</i>		
Warnock's coral-root	<i>Hexalectris warnockii</i>		

4. NATURE AND EXTENT OF CONTAMINATION

The following subsections regarding nature and extent of contamination include: (1) comparison criteria, (2) discussion of historical data, (3) identification of COPCs, (4) discussion of potential source materials, and (5) evaluation of nature and extent of contaminants based on existing data. Data used in this nature and extent of contamination section are from the following sources:

- 2016 Removal Assessment Report (Weston 2016)
- 2017 TCEQ Site Inspection Report (TCEQ 2017).

Additional soil samples were collected and analyzed in November 2015 for use in the 2016 Preliminary Assessment prepared by TCEQ, in cooperation with EPA Region 6 (TCEQ 2016).

These samples were collected within the same areas that were sampled for the Removal Assessment (Weston 2016), global positioning system coordinates were not provided for the sample locations, and a Level 4 Data Package was not prepared. Therefore, the data does not meet EPA data quality requirements and has not been carried forward for use in completing the RI.

4.1 COMPARISON CRITERIA

To provide a basis for evaluating existing chemical concentration data, human health risk levels as well as ecological screening levels were identified as protective comparison values for chemical concentrations in soil, sediment, surface water, liquid waste, and ground water.

Screening levels were based on conservative estimates of exposure and do not represent cleanup levels. Screening level exceedances do not automatically designate an area as contaminated nor do they trigger a response action. Rather, screening level exceedances suggest that further evaluation of the potential risks posed by site contamination is appropriate. The magnitude of exceedance is helpful in evaluating source areas, the nature and extent of contamination, and migration pathways. EPA human health screening levels are based on an excess lifetime carcinogenic risk of 1 in 1,000,000 individuals (1×10^{-6}) or a non-carcinogenic hazard quotient of 1 unless otherwise indicated.

Maximum concentrations of chemicals detected in soil, sediment, surface water, and ground water data were compared to EPA's risk-based residential and industrial RSLs (EPA 2018c) and TCEQ ecological screening (TCEQ 2018) levels.

4.2 CHEMICALS OF POTENTIAL CONCERN

Chemicals that were detected in soil, sediment, surface water, and liquid waste were considered COPCs for this site. Elevated concentrations of COPCs from previous investigations at the site include, but are not limited to: cyanide, lead, mercury, chromium, and hexavalent chromium. These chemicals have been identified as primary COPCs impacting onsite soils, underlying ground water, and sediments downstream from the site. Contaminant levels in onsite soils exceed the EPA RSLs for residential and industrial use (EPA 2018b).

A thorough understanding of the impacts from these primary COPCs across the exposure areas will provide a reliable yet concise picture of COPC distribution. The list of COPCs will be refined as the investigation progresses, which may result in identification of additional COPCs.

4.3 SOURCE

The 2018 Hazardous Ranking System Documentation Record (EPA 2018b) identified the following sources: (1) contaminated soil currently located underneath and surrounding the facility building, (2) underground sumps located inside the facility building, (3) wastes containerized in tanks and other containers, and (4) wastes containerized in drums.

4.4 EXTENT OF CONTAMINATION

An analysis of the data is performed to describe the nature and extent of contamination to soil, sediment, and surface water (EPA 1989a). Chemical concentrations are incorporated with physical characteristics, historical information regarding site activities, and other evidence to evaluate the nature and magnitude of contamination. Similar evidence is used to delineate the extent of contamination both horizontally and vertically. Section 2.2 Site History and Previous Investigations details the sampling results of each investigation. Soil sample locations are presented in Figure 3 and sediment and surface water samples are presented in Figure 4. The overall sample results are summarized here.

4.4.1 Soil

A total of 188 soil samples were analyzed for metals. The soil sample results are presented in Table 1. Concentrations of antimony, arsenic, barium, cadmium, chromium, hexavalent chromium, cobalt, copper, lead, manganese, mercury, nickel, selenium, thallium, vanadium, and zinc exceed the most conservative screening level in at least one sample. Concentrations of the following compounds in surface soil exceed the industrial RSLs: arsenic, hexavalent chromium, lead, and mercury. Generally, the highest concentrations of the primary COPCs (cyanide, lead, mercury, chromium, and hexavalent chromium [Figure 5]) are found in the facility footprint, in the immediate vicinity of the HWTB/Waste Storage Shed, and just south of the HWTB/Waste Storage Shed. The concentrations of at least one primary COPC in each sample exceeds the TCEQ ecological soil benchmarks.

4.4.2 Sediment and Surface Water

Fifteen co-located sediment and surface water samples were collected near the site (Figure 4). The sediment and surface water sample results are presented in Tables 2 and 3, respectively. Concentrations of cadmium, chromium, lead, and mercury in sediment exceed the most conservative screening level in at least one sample. Highest concentrations were not usually found in the same samples. The following sediment samples had detected concentrations in exceedance of the most conservative screening levels: SE-03, SE-04, SE-05, SE-06, SE-07, SE-08, SE-09, SE-10, SE-14, and SE-15. Concentrations of primary COPCs in site sediment do not exceed human health risk screening criteria. Concentrations of primary COPCs in site sediment are compared to ecological risk screening criteria in Figure 6.

Total concentrations of aluminum, arsenic, chromium, copper, iron, lead, manganese, nickel, vanadium, and zinc in surface water exceed the most conservative screening level in at least one sample. The highest surface water concentrations were found in samples SW-04 and SW-03, the samples nearest and downgradient (southeast) to the known sources. Concentrations of the primary COPCs in surface water are compared to human health risk screening criteria in Figure 7 and ecological risk screening criteria in Figure 8.

4.4.3 Waste Samples

Four waste samples were collected from an unknown number of drums and totes and the results were compared to soil benchmarks. The waste sample results are presented in Table 4.

Concentrations of antimony, arsenic, chromium, hexavalent chromium, copper, lead, mercury, nickel, selenium, thallium, vanadium, and zinc exceed the most conservative screening level in at least one sample. Concentrations of the following compounds in surface soil exceed the industrial RSLs: arsenic, hexavalent chromium, mercury, and thallium.

4.4.4 Ground Water

The two onsite shallow wells located adjacent and north of the facility building were sampled in February 2016 for metals. WW-1 displayed chromium and hexavalent chromium concentrations that exceeded the MCL and SCDM for these metals, and WW-2 displayed a hexavalent chromium concentration that exceeded the SCDM for these metals.

5. CONTAMINANT FATE AND TRANSPORT

The nature and extent of contamination is combined with source identification and physical characteristic information to evaluate migration pathways. The following migration pathways may be present, further site evaluation will be necessary to definitively conclude which are present.

5.1 SURFACE WATER TRANSPORT

Contaminant transport of particulates and dissolved phase contaminants via surface water transport may occur through ephemeral pathways during precipitation events toward Stream 5A2 and the small pond.

5.2 LEACHING TO GROUND WATER

As water percolates through vadose zone soil to the underlying ground water, it can carry dissolved phase constituents. Additionally, source material in contact with ground water can leach directly to ground water.

5.3 GROUND WATER TRANSPORT

As ground water migrates laterally through the saturated zone, it can carry dissolved phase constituents.

5.4 GROUND WATER TO SURFACE WATER

Ground water may emanate as surface water at various points (e.g., gaining streams) around the site.

5.5 AIR PARTICULATE MIGRATION

Generally, soil is not considered mobile because ground cover or vegetation often precludes migration. Nonetheless, it may be possible for high wind events to carry fine-grained surface materials and particulates from source areas.

5.6 SOIL VAPOR TO AIR

Volatile organic compounds in soil can migrate from the soil to ambient air, where they can then be transported in the atmosphere.

6. DATA GAPS

To support the development of the RI, additional hydrogeological, shallow ground water, surface and subsurface soil, sediment, and surface water data will be collected. All additional samples will be analyzed for metals including hexavalent chromium. A subset of samples will also be analyzed for organics to determine if the list of COPCs should be expanded. This additional data will help delineate the source areas and the lateral and vertical extent of contamination.

7. HUMAN HEALTH CONCEPTUAL EXPOSURE PATHWAY ANALYSIS

This section presents the preliminary human health CSM and summarizes information on sources of site chemicals, affected environmental media, chemical release and transport mechanisms, potentially exposed receptors, and potentially complete exposure pathways for each receptor. Figures 9 and 1110 present the preliminary human health CSM.

7.1 SOURCES OF SITE CHEMICALS

Section 4 summarizes the nature and extent of contamination. As shown in Figure 10, sources for chemical exposure may include surface soil, subsurface soil, sediment, surface water, ground water, and air. Residual soil source areas are a result of historic site activities. The 2018 Hazardous Ranking System Documentation Record (EPA 2018b) identified the following sources: (1) contaminated soil currently located underneath and surrounding the facility building, (2) underground sumps located inside the facility building, (3) wastes containerized in tanks and other containers, and (4) wastes containerized in drums. Sampling activities will be completed as part of the RI to further define residual source areas and fill existing data gaps.

7.2 AFFECTED ENVIRONMENTAL MEDIA

Residual soil source area(s) have resulted in chemical releases to soil (e.g., vadose zone), sediment, surface water, ground water, and air. Further information regarding chemical releases is a potential data gap that may be filled by future investigatory activities.

7.3 CHEMICAL RELEASES AND TRANSPORT MECHANISMS

Figure 10 summarizes the chemical release and transport mechanisms for the detected chemicals. Based on these mechanisms, chemicals in soil, sediment, surface water, and ground water may also migrate to ambient (i.e., outdoor) air and indoor air (i.e., vapor intrusion and domestic use).

7.4 POTENTIALLY EXPOSED RECEPTORS

The site is in an area with mixed residential or commercial/industrial land use, so these are the most likely potential exposure scenarios. It is likely that construction or maintenance activities may occur that would require excavation, construction, or regrading; therefore, a construction worker scenario was considered. A trespasser scenario was also included in the event that a receptor intrudes onto an impacted portion of the property.

7.5 POTENTIALLY COMPLETE EXPOSURE PATHWAYS

According to EPA guidance (1989b), a complete exposure pathway consists of four elements:

- A source and mechanism of chemical release
- A retention or transport medium (or media in cases involving transfer of chemicals)
- A point of potential human contact with the contaminated medium (referred to as the “exposure point”)
- An exposure route (such as ingestion) at the exposure point.

If any of these elements are missing, then the exposure pathway is considered incomplete. For example, if receptor contact with the source or transport medium does not occur, then the exposure pathway is considered incomplete and is not quantitatively evaluated. Similarly, if human contact with an exposure medium is not possible, the exposure pathway is considered incomplete and is not evaluated.

The preliminary CSM (Figure 10) summarizes information on sources of COPCs, affected environmental media, COPC release and transport mechanisms, potentially exposed receptors, and potential exposure pathways for each receptor. Potentially complete exposure pathways are designated by a “C” in the preliminary CSM. Incomplete exposure pathways are designated by an “I.” Because some of these pathways are based on hypothetical-future exposure, they are considered potentially complete, but may not actually be complete for all receptors in the future.

Exposure routes for each receptor associated with the potentially complete exposure pathways are described in the following sections for the following potential receptors:

- Commercial/Industrial Worker
- Construction Worker

- Trespasser
- Residential.

Commercial/Industrial Worker Exposure

The following exposure pathways for surface soil are potentially complete for the commercial/industrial worker scenario:

- Incidental ingestion of soil
- Dermal contact with soil
- Inhalation of chemicals adsorbed to windblown soils released to outdoor air
- Inhalation of chemicals volatilized from soil to outdoor air
- Inhalation of indoor air vapors from soil vapor intrusion.

The following exposure pathways for ground water are potentially complete for the commercial/industrial worker scenario:

- Ingestion of ground water
- Dermal contact with ground water
- Inhalation of chemicals volatilized from ground water
- Inhalation of indoor air vapors from ground water vapor intrusion.

Commercial/industrial workers are not expected to come into contact with subsurface soil, sediment, or surface water at the site, so these pathways are not complete.

Construction Worker Exposure

The following exposure pathways for surface and subsurface soil are potentially complete for the construction worker scenario:

- Incidental ingestion of soil
- Dermal contact with soil
- Inhalation of chemicals adsorbed to windblown soils in outdoor air
- Inhalation of chemicals volatilized from soil to outdoor air.

The following exposure pathways for ground water are potentially complete for the construction worker scenario:

- Ingestion of ground water
- Dermal contact with ground water
- Inhalation of chemicals volatilized from ground water into a trench.

Trespasser Exposure

The following exposure pathways for surface soil are potentially complete for the trespasser scenario:

- Incidental ingestion of soil
- Dermal contact with soil
- Inhalation of chemicals adsorbed to windblown soils released to outdoor air
- Inhalation of chemicals volatilized from soil to outdoor air.

The following exposure pathways for surface water and sediment are potentially complete for the trespasser scenario:

- Ingestion of fish from Small Pond, Stream 5A2, and other downgradient bodies of water
- Incidental ingestion of sediment and surface water
- Dermal contact with sediment and surface water.

Residential Exposure

The following exposure pathways for surface and subsurface soil are potentially complete for the residential scenario:

- Incidental ingestion of soil
- Dermal contact with soil
- Ingestion of homegrown produce in contact with soil
- Inhalation of chemicals adsorbed to windblown soils released to outdoor air
- Inhalation of chemicals volatilized from soil to outdoor air
- Inhalation of indoor air vapors from soil vapor intrusion.

The following exposure pathways for surface water and sediment are potentially complete for the residential scenario:

- Ingestion of fish from Small Pond, Stream 5A2, and other downgradient bodies of water
- Incidental ingestion of sediment and surface water
- Dermal contact with sediment and surface water.

The following exposure pathways for ground water are potentially complete for the residential scenario:

- Ingestion of ground water
- Dermal contact with ground water
- Inhalation of chemicals volatilized from ground water during domestic use
- Inhalation of indoor air vapors from ground water vapor intrusion.

8. ECOLOGICAL CONCEPTUAL EXPOSURE PATHWAY ANALYSIS

Figures 11 and 12 present the ecological CSM, including potential exposure pathways evaluated for ecological receptors. These were divided into exposures for aquatic and terrestrial habitats. The CSM illustrates both potential and quantifiable pathways through which receptors may be exposed to COPCs. The *Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments* (EPA 1997) provides guidance for designing and conducting technically defensible ecological risk assessments for the Superfund program.

8.1 IDENTIFICATION OF EXPOSURE PATHWAYS

Exposure routes link chemicals in exposure media to ecological receptors. The following sections describe the major exposure routes. Ecological receptors potentially present at the site include plants, terrestrial invertebrates, wildlife (birds, mammals, etc.), and aquatic and benthic organisms. The following sections identify the major routes of exposure and their applicability to each of these receptor groups.

8.1.1 Direct Contact/Dermal Contact

Plants, invertebrates, aquatic and benthic organisms, and wildlife may all be exposed to environmental media through direct contact. Plants may absorb chemicals from surface soil via their roots. They may also absorb chemicals from air or airborne particles through their leaves. Absorption through the roots is expected to be the most significant pathway. Absorption of chemicals from air or airborne particles is expected to be an insignificant pathway (EPA 2005, U.S. Army Center for Health Promotion and Preventive Medicine [CHPPM] 2004); although this pathway may be re-evaluated if new data indicate that significant airborne contamination is present. It is also possible that deep rooting plants come into direct contact with ground water; however, the ground water onsite is likely too deep for this to be a complete pathway. Plants are known to uptake metals and some organics; however, uptake of hydrophobic and/or large molecular weight compounds by plants is limited. Based on this information, direct exposure to surface soil is considered a complete and significant pathway for plants (Figure 12).

Aquatic and benthic organisms may be exposed to chemicals in sediment and surface water through direct contact. Chemicals may be absorbed from water or sediment through the skin and gills. This exposure pathway is considered to be complete and significant for both media (Figure 12).

For soil invertebrates, direct contact with soil is identified as a significant exposure pathway as these organisms live in constant contact with the soil. The invertebrates may also be exposed to chemicals in air through direct contact; however, this exposure is not significant in relation to exposure from soil. Chemicals may be absorbed from soil through the skin. Therefore, for soil invertebrates this exposure pathway is considered to be complete and significant for soil (Figure 12).

Wildlife may be exposed to chemicals in air, soil, sediment, or water via direct contact during foraging or burrowing. However, absorption and uptake through this contact is likely to be insignificant, as shown by example calculations in EPA guidance (EPA 2005). Most wildlife are equipped with protective outer coverings such as fur, feathers, or scales that prevent or limit the dermal absorption of chemicals from environmental media (CHPPM 2004). Amphibians and reptiles may not be as well protected from dermal exposure. EPA guidance identifies that, in most cases, dermal exposures are likely to be less significant than exposures through ingestion and their evaluation involves considerable uncertainty (EPA 2005). This guidance provides example calculations for an example species showing that less than 0.2 percent of the total chemical dose to wildlife is likely to come from dermal contact. This exposure route is considered complete for reptiles and amphibians and complete but insignificant for other wildlife receptors (Figure 12).

8.1.2 Inhalation

Inhalation is a potentially complete pathway for both terrestrial invertebrates and wildlife. These animals may inhale chemicals which have volatilized or which are adsorbed to airborne particulates. Currently, it is unclear whether volatile compounds are present at the site in high enough concentrations to cause significant exposures. Similarly, it is unclear whether suspension of airborne particulates occurs with sufficient duration or frequency to result in significant inhalation exposures. EPA guidance indicates that, in general, inhalation pathways are likely to be insignificant compared to ingestion pathways (EPA 2005). This guidance states that most chemicals inhaled with dust are trapped in mucus membranes and ingested; therefore, their impact is captured through analysis of incidentally ingested soil. It also provides example calculations showing that less than 0.1 percent of the total risk to wildlife is likely to come from inhalation. Finally, a large number of assumptions are required for quantification of inhalation exposures, leading to significant uncertainties. Based on this information, inhalation exposures are considered to be a complete but insignificant exposure pathway for the site (Figure 12).

8.1.3 Ingestion

The most significant exposure route for wildlife is ingestion of chemicals in contaminated media (EPA 2005). Wildlife may ingest chemicals in environmental media by drinking surface water or by incidentally ingesting soil and sediment while grooming or foraging. As discussed above, chemicals may bioaccumulate in the tissue of plants and animals. Therefore, wildlife may also ingest chemicals in plants and animals that they consume as food. Herbivores may be exposed to chemicals that have bioaccumulated in plant tissue. Carnivores may be exposed to chemicals that have accumulated in prey. Omnivores may be exposed to chemicals in both plant and animal food items. The site is expected to support a range of wildlife that spans several trophic levels and feeding guilds. This includes both primary and secondary consumers, and species which consume plants, invertebrates, small birds and mammals, and fish or aquatic organisms. Ingestion of chemicals in soil, sediment, surface water, and food are considered complete and potentially significant exposure pathways (Figure 12).

8.1.4 Exposure to Subsurface Soil and Ground Water

For aquatic and terrestrial receptors, exposure to ground water and subsurface soil are considered incomplete pathways. Aquatic receptors are expected to receive most of their exposure in the top 1 foot of sediments and terrestrial receptors in the top 1 foot of the surface soil. However, subsurface soil and ground water contamination may contaminate surface media, which ecological receptors will be exposed to, via exfiltration and seeps. The subsurface soil and ground water are considered potential sources but not exposure media.

8.1.5 Media of Concern

The expected media of concern include site surface and subsurface soil, site ground water, and sediment in the forest near the facility; and sediment and surface water in the Stream 5A2 and small pond. Complete, significant exposure pathways for receptors are expected to be limited to exposure to surface soil, sediment, surface water, and terrestrial and aquatic food chains.

8.2 ASSESSMENT ENDPOINTS

EPA guidance stresses the importance of ecologically significant endpoints. As EPA indicates, "Assessment endpoints are explicit expressions of the actual environmental value that are to be protected, operationally defined by an ecological entity and its attributes" (EPA 1998, U.S. Army Biological Technical Assistance Group [BTAG] 2002). The selection of assessment endpoints is based on the fundamental knowledge of local ecology. Assessment endpoints typically relate to an effect on a population or community. Survival of a specific species of insect is an example of a population level assessment endpoint. Community level assessment endpoints could include survival of benthic invertebrates or maintenance of multiple populations of birds.

Based on the CSM, ecological receptors may be exposed to COPCs from food, surface water, soil, and sediment. Based on the identified ecological receptors, habitats, and the above observations, the following ecological assessment endpoints are defined:

1. Protection of **terrestrial plant** survival, growth, and reproduction from adverse effects of COPCs in soil.
2. Protection of **wetland and aquatic plants** survival, growth, and reproduction from adverse effects of COPCs in sediment and surface water.
3. Protection of **soil invertebrates** exposed to COPCs in soil from adverse effects on survival, growth, and reproduction.
4. Protection of **aquatic and benthic communities** (e.g., fish and crustaceans) exposed to COPCs in sediment, surface water, and food from adverse effects on survival, growth, and reproduction.

5. Protection of **herbivorous mammals** to ensure that ingestion of COPCs in soil, sediment, and food do not have adverse effects on survival, growth, and reproduction.
6. Protection of **herbivorous birds** to ensure that ingestion of COPCs in soil, sediment, and food do not have adverse effects on survival, growth, and reproduction.
7. Protection of **insectivorous mammals** to ensure that ingestion of COPCs in soil and food do not have adverse effects on survival, growth, and reproduction.
8. Protection of **insectivorous birds** to ensure that ingestion of COPCs in soil and food do not have adverse effects on survival, growth, and reproduction.
9. Protection of **piscivorous mammals** to ensure that ingestion of COPCs in sediment and food do not have adverse effects on survival, growth, and reproduction.
10. Protection of **piscivorous birds** to ensure that ingestion of COPCs in sediment and food do not have adverse effects on survival, growth, and reproduction.
11. Protection of **predatory mammals** to ensure that ingestion of COPCs in soil and food do not have adverse effects on survival, growth, and reproduction.
12. Protection of **predatory birds** to ensure that ingestion of COPCs in soil and food do not have adverse effects on survival, growth, and reproduction.
13. Protection of **reptiles and amphibians** to ensure that ingestion of COPCs through contact with soil, sediment, and food does not have adverse effects on survival, growth, and reproduction.

EPA guidance (EPA 1999) specifies that the goal is to protect the above receptor groups from population impacts. The use of individuals to assess impacts is a highly conservative estimator of potential impacts on populations. This is a source of uncertainty that may lead to the overestimation of risks.

8.3 SELECTION OF REPRESENTATIVE RECEPTORS

Specific receptor groups and representative receptor species are selected to represent each of the ecological resource categories identified above. Selection of representative receptor species is based primarily on several factors: (1) the likelihood of a species to use the site, (2) the potential for exposure to site-related contaminants based on the feeding habits and life history of the organisms/guild represented by the receptor species, (3) the availability of life history and exposure information for the selected receptor species, and (4) the availability of toxicity information for the representative receptor species. The rationale for use of representative receptor species is summarized below. In cases where available toxicity data are of a general nature, communities or trophic levels were selected for evaluation.

Although currently it does not appear to be the case, as there is no known documentation, if it is determined that a protected species exists at the site through consultation with Texas Parks & Wildlife during the ecological risk assessment; a suitable surrogate species will be identified and used as a representative receptor throughout the risk evaluation. When evaluating risk to a protected species via a surrogate, it is important that the individual be protected. The representative receptor groups are summarized below.

8.3.1 Aquatic Species

Wetland and Aquatic Plants

These receptors are exposed to chemical contaminants by direct contact with sediments and surface waters; these are the only complete exposure pathways identified (Figure 12). The roots of wetland and aquatic plants are in continuous contact with bottom sediments and active uptake of contaminants by roots can occur. Stems and other immersed tissues could uptake contaminants from surface water through stomata. There are limited benchmarks available for surface water exposure to plants (Suter and Tsao 1996, Efroymson et al. 1997). Wetland and aquatic plants can be assumed to be protected in the event that no phytotoxicity data is available if it can be shown that surface water concentrations meet water quality benchmarks. No other exposure pathways are complete, because root systems are not deep enough to penetrate to subsurface layers or ground water. Transfer of particulates from air to the surface of the plant is expected but this is not likely to be a route of exposure because of the relatively impermeable nature of plant cell walls.

Based on the general nature of available plant toxicity data, no specific plant species are selected for evaluation. Instead, the assessments evaluate the potential for adverse effects to wetland and aquatic plant communities.

Aquatic and Benthic Organisms

These receptors are exposed to chemical contaminants by direct contact with and ingestion of sediment and surface water, as well as consumption of fish and benthos (Figure 12). Exposure to ground water and subsurface soil are also incomplete pathways, because these organisms live in the bottom sediments or within surface waters. Because of the aquatic nature of these receptors, exposure to airborne particulates is also an incomplete pathway.

The toxicity data being used in the risk assessment are designed to evaluate the potential for adverse effects to aquatic and benthic organisms. Therefore, individual species are not selected for evaluation, and the assessments evaluate the potential for adverse effects to the overall aquatic and benthic populations.

Herbivorous Wildlife

Herbivorous birds and mammals are exposed to chemical contaminants from surface water, sediment, and vegetative matter, chiefly during foraging. These receptors are exposed to

contaminants via direct contact with and ingestion of surface water and sediment and the ingestion of food (plant tissue). All of these represent complete pathways, but only the incidental ingestion of sediment and the consumption of food will be considered significant (Figure 12).

The muskrat (*Ondatra zibethicus*) is selected as the mammalian receptor species for evaluating potential adverse effects to mammals from the ingestion of plants. The muskrat diet includes significant amounts of plant food items (EPA 1993). Therefore, the muskrat is selected as a representative receptor species for the evaluation of potential adverse effects to mammals from feeding at the site.

The Canada goose (*Branta canadensis*) is selected as the representative receptor species to evaluate the potential for adverse effects to herbivorous birds from the ingestion of chemicals in plant material. Birds can be more sensitive to certain contaminants (Sample et al. 1996), and it is therefore more conservative to include an avian receptor. The Canada goose is selected as a representative receptor species because its diet is mostly comprised of plant material (EPA 1993) and this species can be an important part of the diet of predatory mammals.

Piscivorous Wildlife

Piscivorous birds and mammals are exposed to chemical contaminants chiefly during foraging and feeding. These receptors are exposed to contaminants via direct contact with surface water and sediment as well as the ingestion of food (fish and benthos), surface water, and sediment. All of these represent complete pathways, but only the incidental ingestion of sediment and the consumption of food will be considered significant (Figure 12). To identify potentially impacted piscivorous species groups, the feeding guilds of the mammals, invertebrates, and birds known to occur in the study area were reviewed. Those identified as having the greatest potential to be adversely affected are selected for detailed evaluation.

The North American river otter (*Lutra canadensis*) was selected as the mammal species for evaluating potential adverse effects to mammals from the ingestion of fish and benthic and aquatic invertebrates at the site. Since a large proportion of their diet is comprised of fish, the river otter was selected as the representative piscivorous mammal.

The great blue heron (*Ardea herodias*) is selected as the avian receptor species for evaluating potential adverse effects to birds from the ingestion of fish, amphibians, and crayfish from the area. The great blue heron is selected for evaluation, because a large proportion of the diet is comprised of fish (including game fish) and larger aquatic invertebrates, and the heron may forage in the areas bordering these sites. In some areas, game fish (such as large-mouth bass) can comprise one-quarter of a heron's diet (Cottam and Uhler 1945).

8.3.2 Terrestrial Species

Terrestrial Plants

Complete exposure pathways have been identified for plants, which may be exposed to

chemicals at the site through direct contact with soil (Figure 12). Based on the general nature of available plant toxicity data, no specific plant species are selected for evaluation. Instead, the assessments evaluate the potential for adverse effects to terrestrial plant communities and crops.

Soil Invertebrates

Complete exposure pathways for soil invertebrates include direct contact with soil and the ingestion of soil and food (Figure 12). The site is expected to provide habitat for a range of invertebrates, including earthworms and arthropods. The earthworm was selected as the representative receptor species for soil invertebrates. Earthworms are an ideal receptor because they are in constant contact with the soil, have a significant lipid content that may accumulate chemicals, and do not have an exoskeleton; as such, they represent a precautionary estimate of exposure.

Herbivorous Wildlife

Herbivorous birds and mammals are exposed to chemical contaminants from soil and vegetative matter, chiefly during foraging. These receptors are exposed to contaminants via direct contact with soil, ingestion of food (plant tissue), and incidental ingestion of soil. All of these represent complete pathways but only the ingestion of soil and food are considered significant (Figure 12).

The white-footed mouse (*Peromyscus leucopus*) was selected as the representative receptor species to evaluate the potential for adverse effects to herbivorous mammals. The white-footed mouse is an appropriate receptor species because it is likely to occur at the site, it is a potential food source for other animals, and has a life history similar to that of many other small mammals. Also, sufficient data is available for this species to support quantitative evaluation of food web exposures.

The song sparrow (*Melospiza melodia*) was selected as the representative receptor species to evaluate the potential for adverse effects to herbivorous birds. Song sparrows are an appropriate representative receptor because they are expected to be present at the site and have a life history similar to that of many other songbirds. Also, sufficient data is available for this species to support quantitative evaluation of food web exposures.

Insectivorous Wildlife

Insectivorous birds and mammals are exposed to chemical contaminants chiefly during foraging and feeding. These receptors are exposed to contaminants via direct contact with soil and airborne dust, ingestion of food (animal tissue), incidental ingestion of soil, and inhalation of airborne dust. All of these represent complete pathways but only the ingestion of soil and food are considered significant (Figure 12).

The American robin (*Turdus migratorius*) was selected as the representative receptor species to evaluate the potential for adverse effects to insectivorous birds. American robin is an appropriate receptor because it occurs in a wide range of habitat types, is expected to be present at the site, feeds primarily on invertebrates, and has a life history similar to that of many other

passerine birds. Also, sufficient data is available for this species to support quantitative evaluation of food web exposures.

The least shrew (*Cryptotis parva*) was selected as the representative receptor species to evaluate the potential for adverse effects to insectivorous mammals. The shrew is an appropriate receptor species because it is a potential food source for other animals, is likely to occur around the site, and has a life history similar to that of many other small mammals. Also, sufficient data is available for this species to support quantitative evaluation of food web exposures.

Predatory Wildlife

Predatory birds and mammals are exposed to chemical contaminants from soil, airborne particulates, and prey. These receptors are exposed to contaminants via direct contact with soil and airborne dust, ingestion of food (animal tissue), incidental ingestion of soil, and inhalation of airborne dust. All of these represent complete pathways but only ingestion of soil and food are considered significant (Figure 12). Because these organisms are commonly not herbivorous, direct and indirect exposure to contaminants in plant tissue is not a complete pathway. Consumption of fish and benthos is also not a major exposure pathway for predatory wildlife. Predatory species identified as having the greatest potential to be adversely affected are selected for detailed evaluation.

Red fox (*Vulpes vulpes*) was selected as the representative receptor for predatory mammals because it is expected to be present at the site, feeds primarily on small mammals, has a high potential for exposure due to bioaccumulation through the food chain, and is a valuable component to ecosystem structure by regulating the abundance, reproduction, distribution, and recruitment of lower trophic level prey (EPA 1999). Also, sufficient data is available for this species to support quantitative evaluation of food web exposures.

The red-tailed hawk (*Buteo jamaicensis*) was selected as the representative receptor for predatory birds because it is likely to be present at the site. The red-tailed hawk is selected as a suitable representative for a predatory bird receptor, because it feeds predominantly on small mammals (such as mice, shrews, voles, rabbits, and squirrels). Also, sufficient data is available for this species to support quantitative evaluation of food web exposures.

8.3.3 Reptiles and Amphibians

Reptiles and amphibians are exposed to chemical contaminants from surface water, sediment, soil, airborne dust, and prey. These receptors are exposed to contaminants via direct contact with and ingestion of sediment, surface water, airborne dust, and soil as well as ingestion of food (prey tissue). All of these represent complete pathways but only the ingestion of food and the ingestion of and direct contact with sediment and soil are considered significant (Figure 12). Although oral dose toxicity data are largely unavailable for these taxa, some toxicological information for amphibians and reptiles are available. Immersion and dermal absorption may also be available and are appropriate pathways for evaluation of, or in conjunction with, oral dose data particularly for amphibians. Amphibians can be assumed to be protected in the event that no amphibian toxicity data for specific contaminants can be found; if it can be shown that

surface water concentrations meet water quality benchmarks; and if sediment concentrations are protective of benthic invertebrates. The toxicity data being used in the risk assessment are designed to evaluate the potential for adverse effects to aquatic and benthic organisms.

Therefore, individual species are not selected for evaluation, and the assessments evaluate the potential for adverse effects to the overall reptile and amphibian populations.

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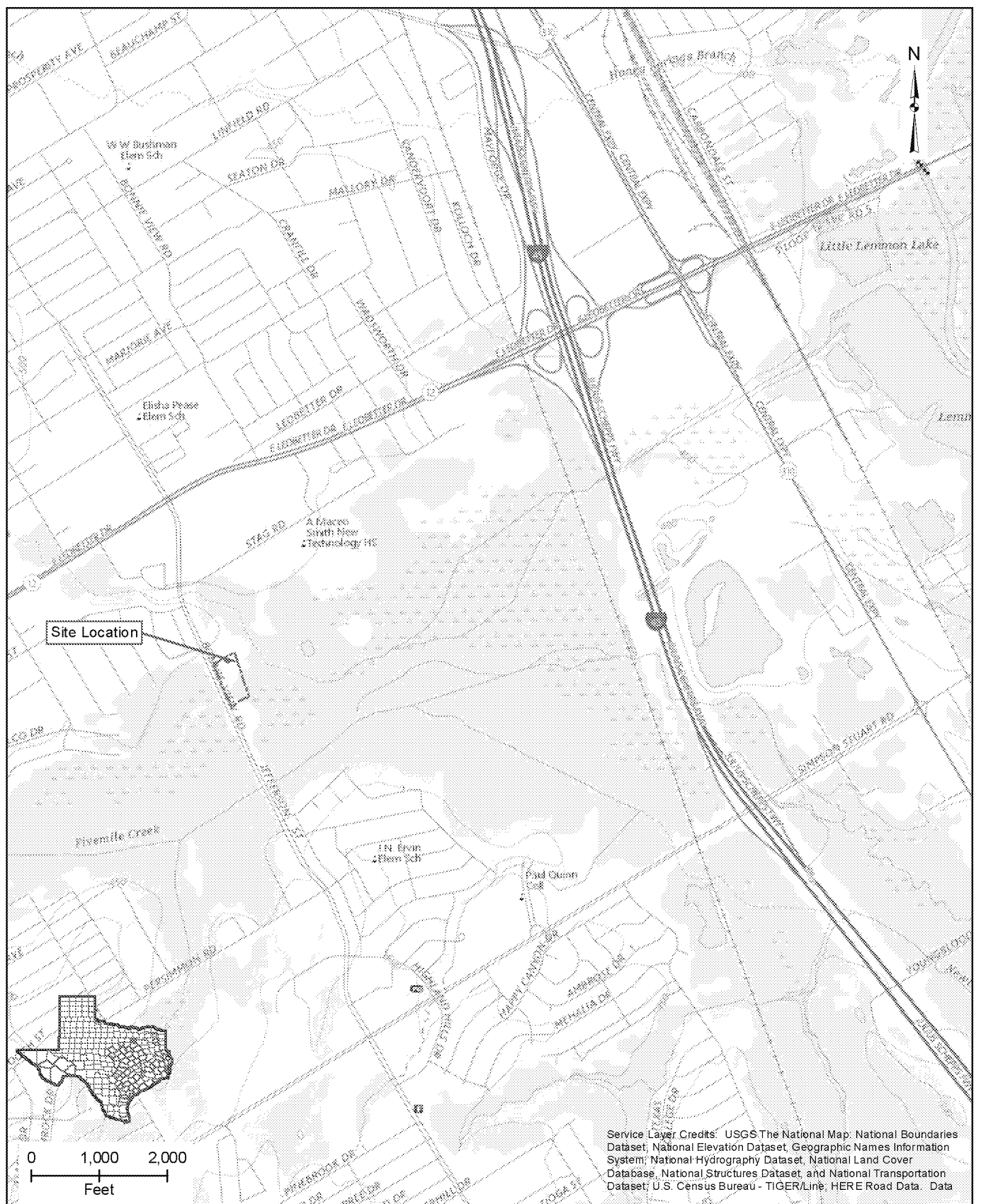
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FIGURES

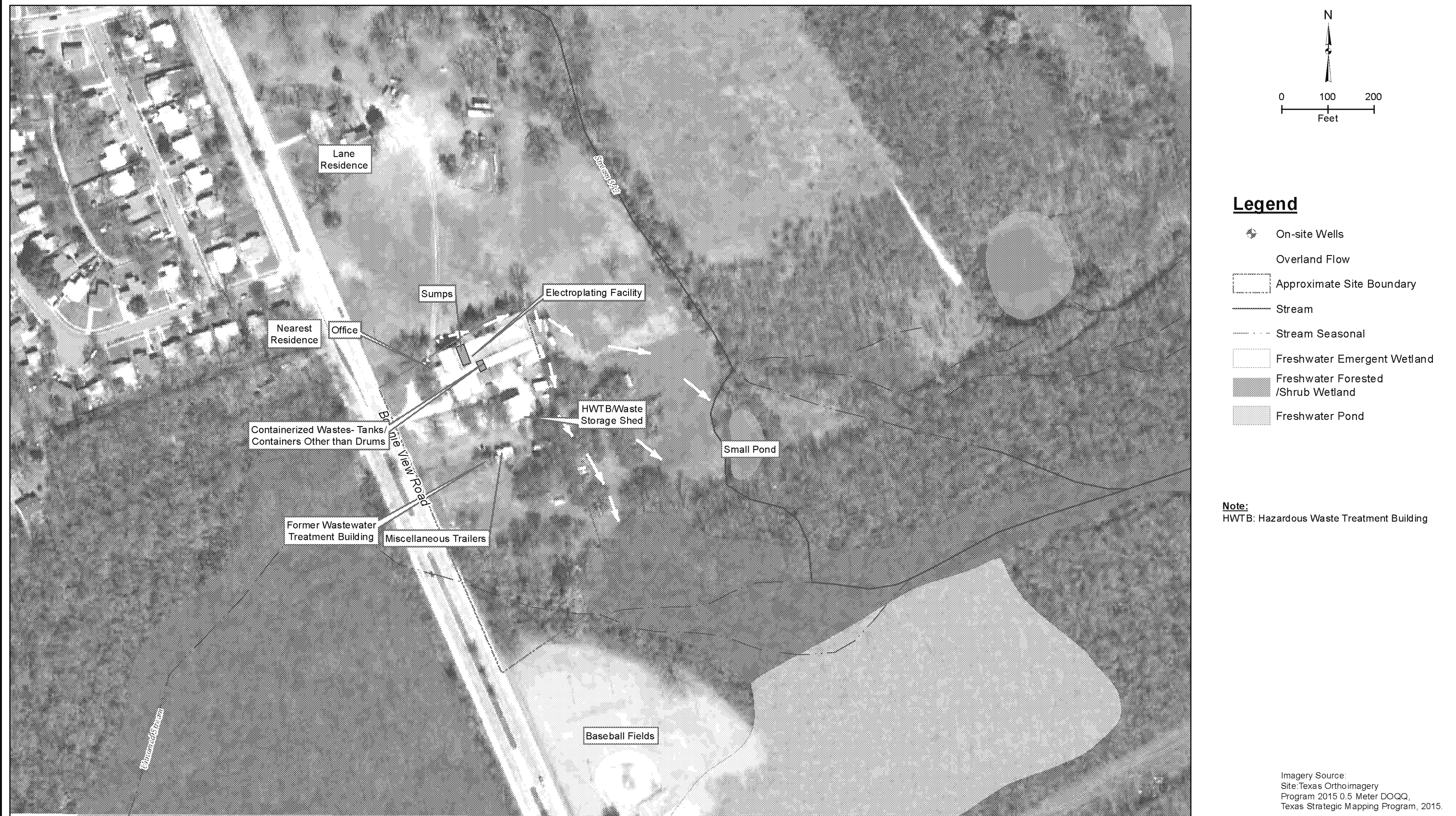
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Lane Plating Works Superfund Site
Dallas, Dallas County, Texas

Figure 1
Site Location

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Lane Plating Works Superfund Site
Dallas, Dallas County, Texas

Figure 3
Soil Sample Locations

Imagery Source: Texas Orthoimagery
Program 2015 0.5 Meter DOQQ,
Texas Strategic Mapping Program, 2015.

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COPC	EPA RSL Residential (mg/kg)	EPA RSL Industrial (mg/kg)
Chromium	120000	1800000
Hexavalent Chromium	0.3	6.3
Cyanide	23	150
Lead	400	800
Mercury	11	46



Legend

Soil Human Health COPC Exceedances

- Greater than EPA Industrial RSL
- Greater than or equal to EPA Residential RSL and less than Industrial RSL
- Does not exceed EPA RSL for residential and industrial use

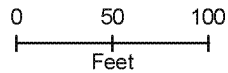
On-site Wells

Stream

Freshwater Forested/Shrub Wetland

Approximate Site Boundary

NOTES
COPC - Chemical of potential concern
EPA - Environmental Protection Agency
RSL - Regional Screening Level
mg/kg - Milligrams per kilogram
Detected results as qualified by U.S. EPA

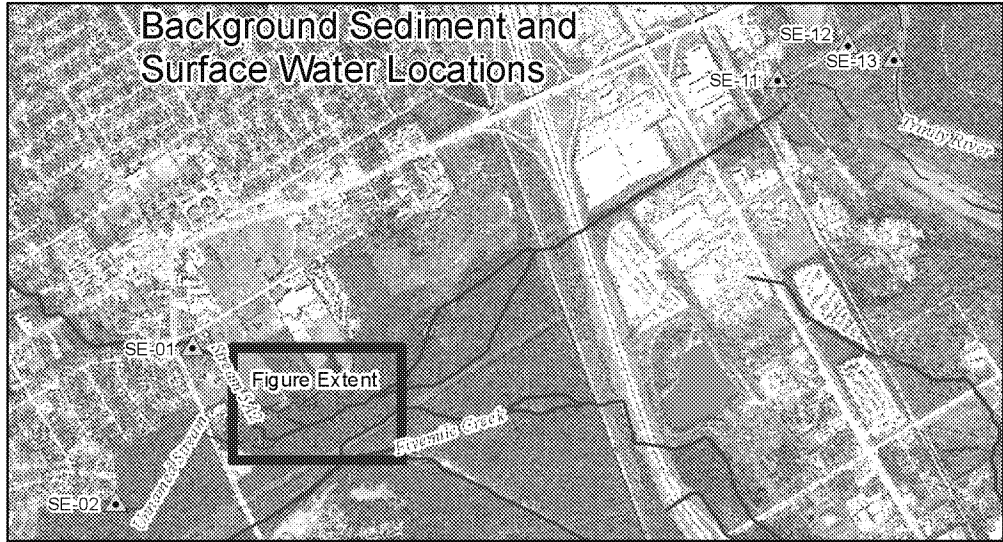


Lane Plating Works Superfund Site
Dallas, Dallas County, Texas

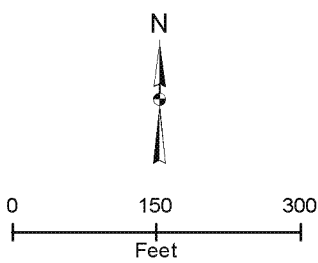
Imagery Source: Texas Orthoimagery
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Figure 5
Soil Human Health Screening

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COPC	TCEQ Freshwater Sediment Benchmark (mg/kg)	TCEQ Second-Effects Level (mg/kg)
Chromium	43.4	111
Hexavalent Chromium*	43.4	111
Cyanide	NA	NA
Lead	35.8	128
Mercury	0.18	1.06
*Chromium values used for hexavalent chromium comparison.		



Legend

Sediment Ecological

COPC Exceedances

- Greater than TCEQ Second-Effects Level
- Greater than or equal to TCEQ Freshwater Sediment Benchmark and less than TCEQ Second-Effects Level
- Does not exceed TCEQ Freshwater Sediment Benchmark

- Stream
- Stream Seasonal
- Approximate Site Boundary

Wetlands

- Freshwater Emergent Wetland
- Freshwater Forested /Shrub Wetland
- Freshwater Pond
- Lake
- Riverine

NOTES
COPC - Chemical of potential concern
TCEQ - Texas Commission on Environmental Quality
mg/kg - Milligrams per kilogram

Imagery Source:
Texas Orthoimager
Program 2015 0.5 Meter DOQQ,
Texas Strategic Mapping Program, 2015.



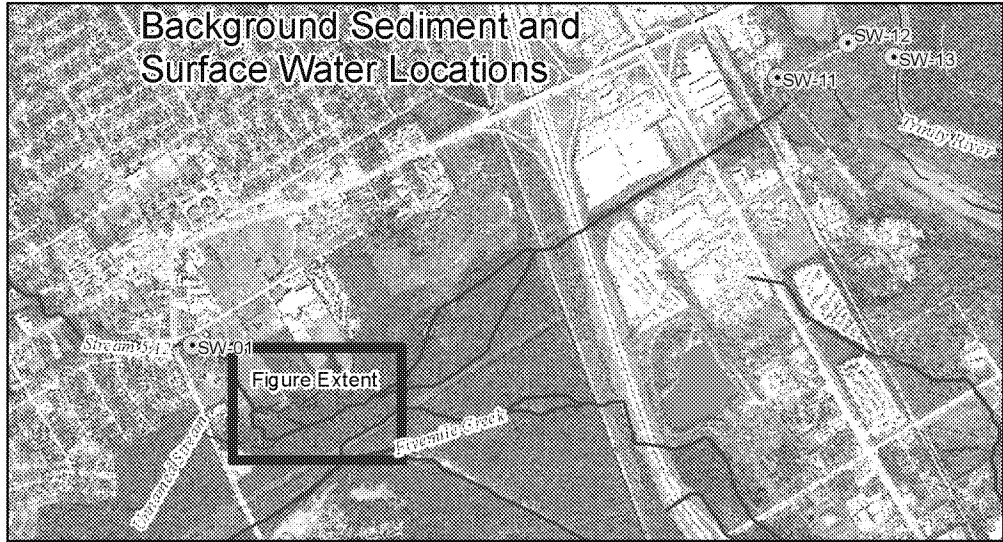
Lane Plating Works Superfund Site
Dallas, Dallas County, Texas

Figure 6
Sediment Ecological Risk Screening

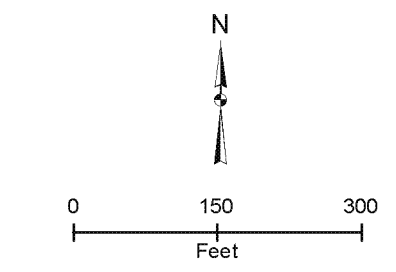
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COPC	TCEQ Freshwater Chronic Benchmark (ug/L)	TCEQ Freshwater Acute Benchmark (ug/L)
Chromium	42	320
Hexavalent Chromium	10.6	15.7
Cyanide	10.7	45.8
Lead	1.17	30.14
Mercury	1.3	2.4



Legend

Surface Water Ecological COPC Exceedance

- Greater than TCEQ Freshwater Acute Benchmark
- Greater than TCEQ Freshwater Chronic less than TCEQ Freshwater Acute Benchmark
- Less than TCEQ Freshwater Chronic Benchmark

Approximate Site Boundary

Stream

Stream Seasonal

Wetlands

Freshwater Emergent Wetland

Freshwater Forested /Shrub Wetland

Freshwater Pond

Lake

Riverine

NOTES

COPC - Chemical of potential concern
TCEQ - Texas Commission on Environmental Quality
ug/L - Micrograms per liter

Imagery Source:
Texas Orthoimager
Program 2015 0.5 Meter DOQQ,
Texas Strategic Mapping Program, 2015.



Lane Plating Works Superfund Site
Dallas, Dallas County, Texas

Figure 8
Surface Water Ecological Screening

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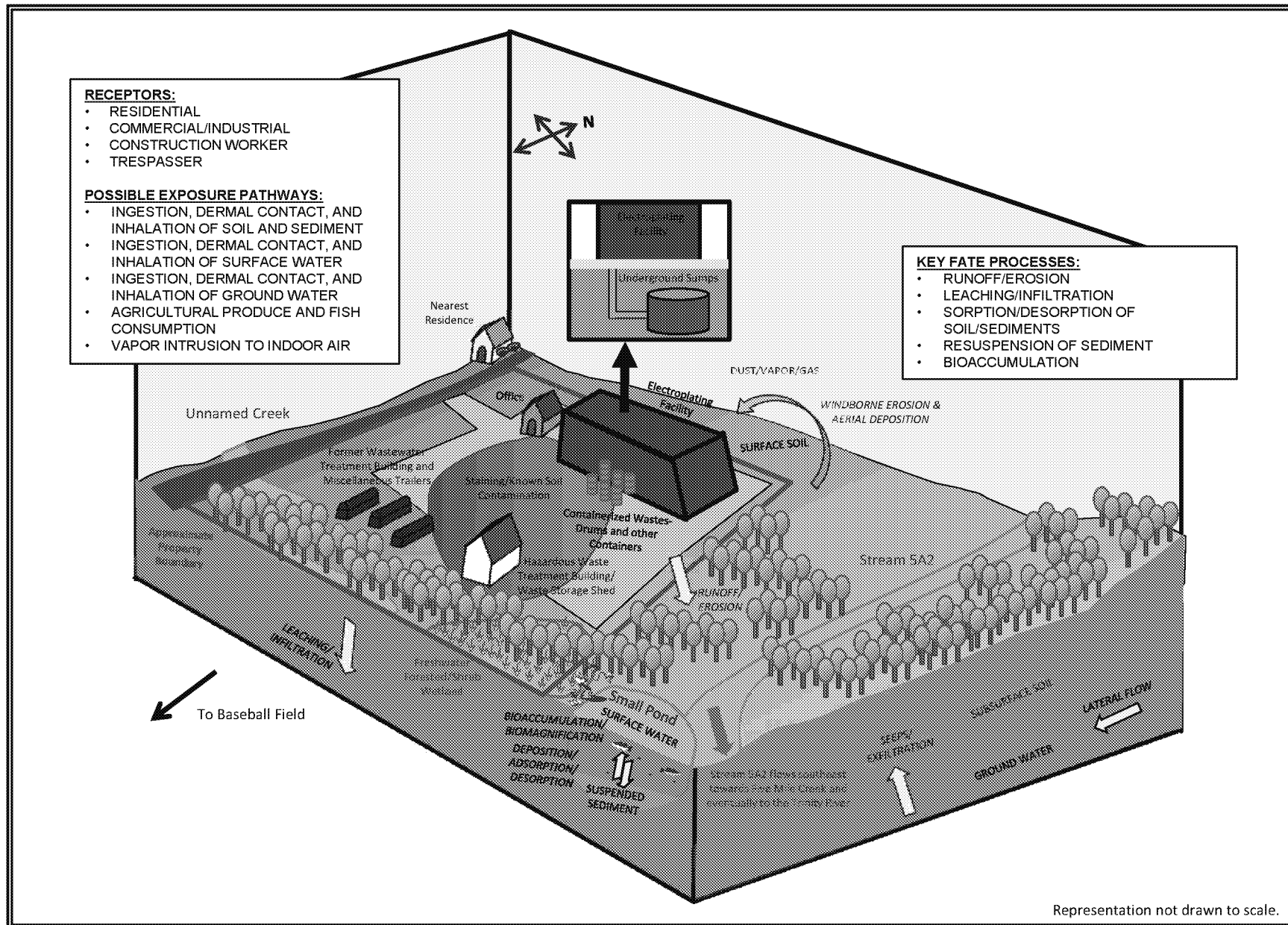


Figure 9 Graphical Presentation of the Preliminary Human Health Conceptual Site Model

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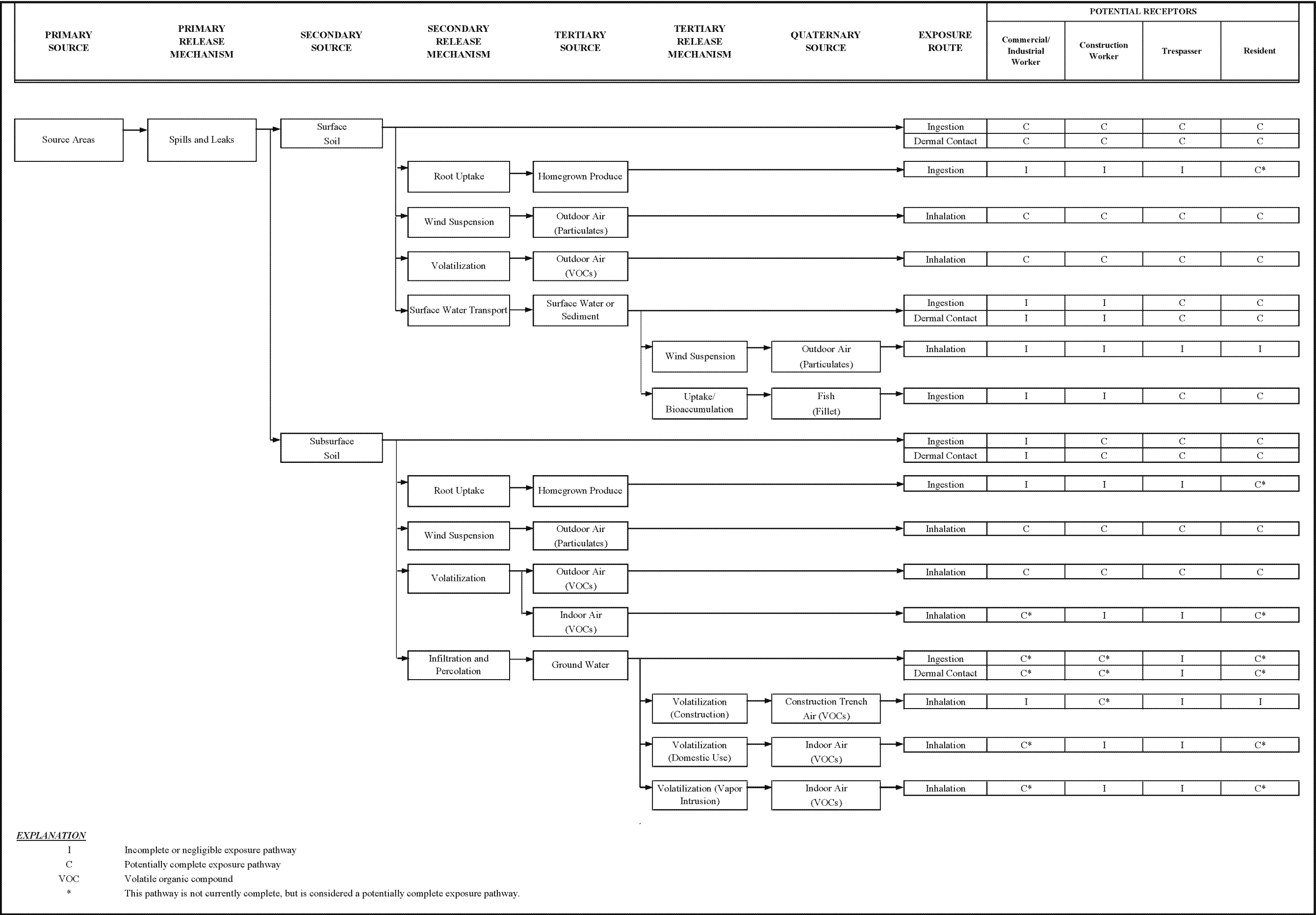


Figure 10 Preliminary Human Health Conceptual Site Model

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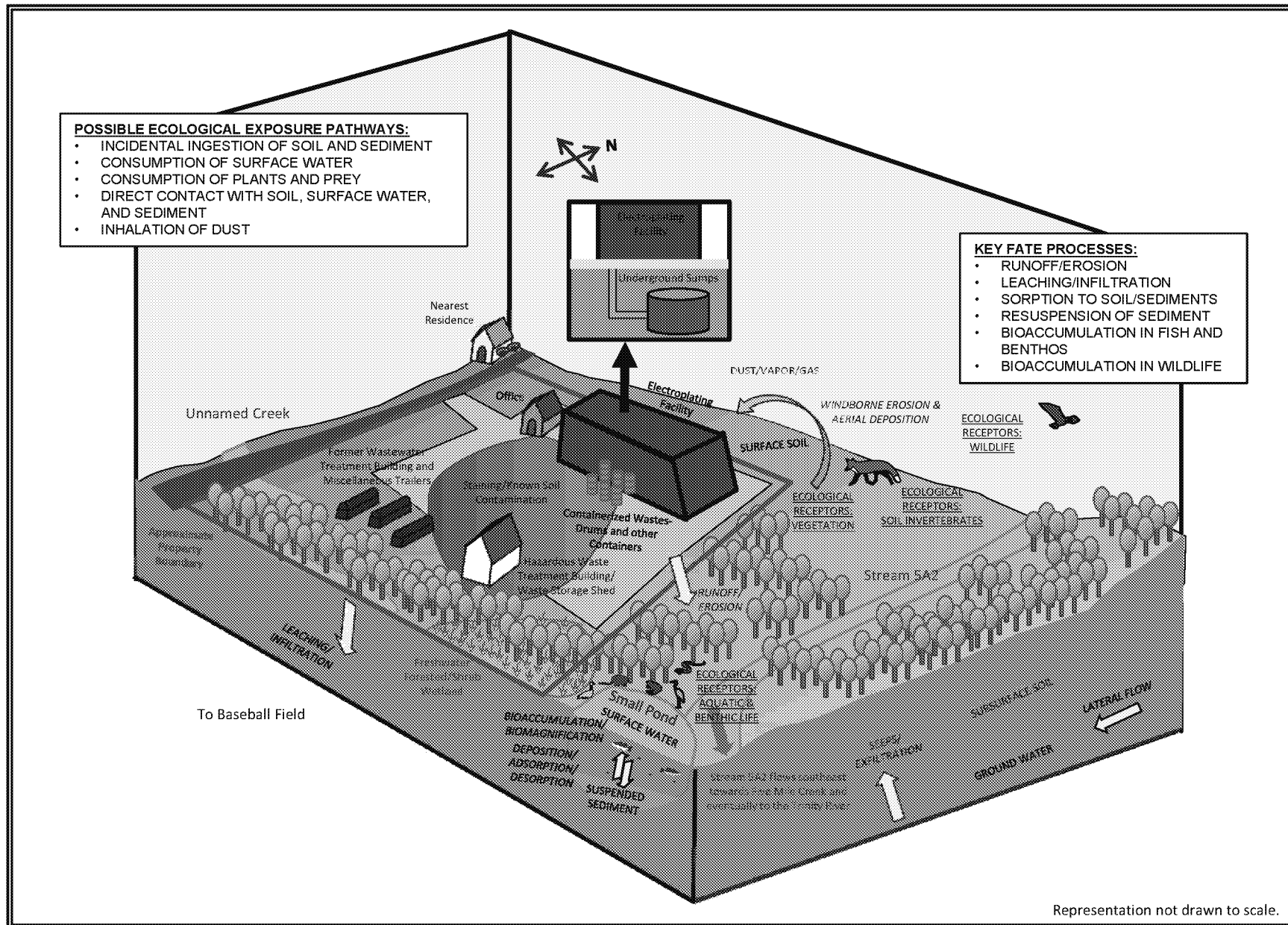


Figure 11 Graphical Presentation of the Preliminary Ecological Conceptual Site Model

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AQUATIC EXPOSURE PATHWAYS

TERRESTRIAL EXPOSURE PATHWAYS

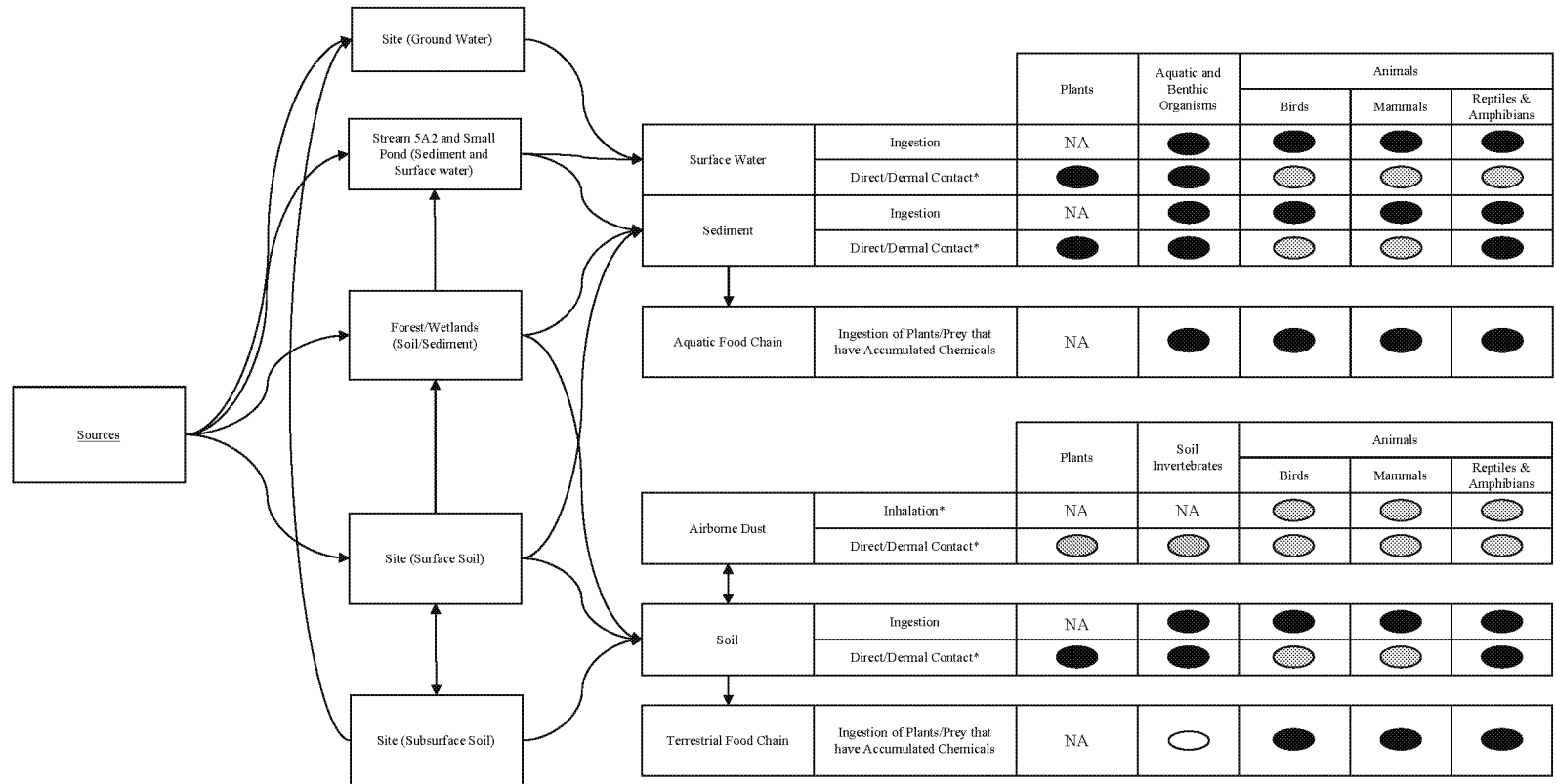
PRIMARY and SECONDARY
SOURCES

ENVIRONMENTAL
MEDIA

EXPOSURE
MEDIA

EXPOSURE
PATHWAYS

RECEPTORS



* Inhalation and direct contact are identified as complete pathways for higher trophic level wildlife. However, example calculations and information provided in EPA and other exposure modeling guidance demonstrates that these pathways are insignificant compared to ingestion (EPA 2005; CHPPM 2004).

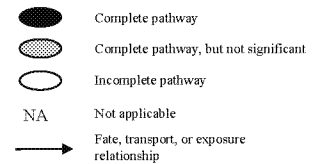


Figure 12 Preliminary Ecological Conceptual Site Model

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TABLES

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	Residential Human Health Screening Value	Industrial Human Health Screening Value	Ecological Screening Value	Sample ID: Date: Depth (in): Units	SO-01 7/20/2016 --	SO-02 7/20/2016 --	SO-03 7/20/2016 --	SO-04 7/20/2016 --	SO-05 7/20/2016 --	SO-06 7/19/2016 --	SO-07 7/20/2016 --	SO-08 7/20/2016 --
Chemical												
Aluminum	77000	1100000	NA	mg/kg								
Antimony	31	470	5	mg/kg	0.6 U	0.6 U	<u>6.4</u> J-	0.5	0.5	0.9	0.5 U	<u>12.7</u>
Arsenic	0.68	3	18	mg/kg	5.2	4.6	6.2	6.5	7.4	5.7	5.4	6.8
Barium	15000	220000	330	mg/kg								
Beryllium	160	2300	10	mg/kg								
Cadmium	NA	NA	32	mg/kg	0.8	0.6	<u>82.2</u> J	14.9	17	7.3	1	<u>63</u> J
Chromium	120000	1800000	0.4	mg/kg	<u>10.7</u>	<u>7.9</u>	<u>4180</u> J	<u>2100</u>	<u>3970</u>	<u>1440</u>	<u>30.5</u>	<u>4510</u> J
Chromium, Hexavalent*	0.3	6.3	0.4	mg/kg								
Cobalt	23	350	13	mg/kg								
Copper	3100	47000	70	mg/kg	12.8	11.1	<u>249</u> J	59.1	44.4	61.7	23.7	<u>276</u> J
Cyanide	23	150	NA	mg/kg	0.29 LJ	0.56 U	0.48 LJ	0.8	0.24 LJ	0.56 U	0.47 LJ	0.59 LJ
Iron	55000	820000	NA	mg/kg								
Lead	400	800	120	mg/kg	52.9	24.6	1620 J	109	60.7	<u>171</u>	<u>149</u>	3010 J
Manganese	1800	26000	220	mg/kg								
Mercury	11	46	0.1	mg/kg	<u>0.74</u> U	<u>0.69</u> U	32.6 J	<u>6.63</u>	<u>5.37</u>	<u>6.18</u>	<u>0.2</u>	54.6 J
Nickel	1500	22000	38	mg/kg	18.5	15.2	<u>535</u>	<u>359</u>	<u>82.3</u>	<u>78.5</u>	17.3	<u>497</u>
Selenium	390	5800	0.52	mg/kg								
Silver	390	5800	560	mg/kg								
Thallium	0.78	12	1	mg/kg								
Vanadium	390	5800	2	mg/kg								
Zinc	23000	350000	120	mg/kg	47.5	36.1	<u>465</u>	<u>176</u>	<u>249</u>	106	90.5	<u>433</u>
NOTES: Bold = Exceedances of Residential Human Screening Values. Bold Italic = Exceedances of Industrial Human Health Screening Values. <u>Underlined</u> = Exceedances of Ecological Screening Values. *Ecological screening level for chromium used for hexavalent chromium. J = Indicates that the concentration is an estimated value. U = Indicates the analyte was analyzed for but not detected. mg/kg = Milligrams per kilogram. NA = Not available. Qualifiers based on "Result_Qualifier" field of EPA provided sample database. Human Health Screening Values from: EPA. 2018. Region 9. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. San Francisco, CA: U. S. Environmental Protection Agency, Region 9; October 2018. Ecological Screening Values are protective of most sensitive receptor from: TCEQ. 2018. TCEQ’s Ecological Benchmark Tables. Soil Benchmarks. TCEQ publication RG-263b.												

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Chemical	Residential Human Health Screening Value	Industrial Human Health Screening Value	Ecological Screening Value	Sample ID: Date: Depth (in): Units	A0-160920-SS-06-01 9/20/2016 0-6	A0-160920-SS-18-01 9/20/2016 12-18	A10-160921-SS-06-01 9/21/2016 0-6	A10-160921-SS-18-01 9/21/2016 12-18	A1-160412-SS-03-01 4/12/2016 0-3
	Value	Value	Value	Units					
Aluminum	77000	1100000	NA	mg/kg	5040	5400	6360	10000	9370 JK
Antimony	31	470	5	mg/kg	2.57 UJL	2.62 UJL	1.04 UJL	1.09 UJL	0.236 UJ
Arsenic	0.68	3	18	mg/kg	6.14 JL	6.85 JL	7.85 JL	6.4 JL	9.37
Barium	15000	220000	330	mg/kg	66.1	52.4	85	97.9	68.8
Beryllium	160	2300	10	mg/kg	0.398 JQ	0.369 JQ	0.407 JQL	0.462 JQL	0.534
Cadmium	NA	NA	32	mg/kg	0.294 JQ	2.62 U	0.931 JQ	0.334 JQ	0.351
Chromium	120000	1800000	0.4	mg/kg	<u>20.2</u>	<u>9.56</u>	<u>39.2</u>	<u>16.4</u>	<u>26.5</u> JK
Chromium, Hexavalent*	0.3	6.3	0.4	mg/kg	<u>2.14</u> UJL	<u>2.14</u> UJL	<u>2.22</u> U	<u>2.26</u> U	<u>2.24</u> U
Cobalt	23	350	13	mg/kg	5.75	5.84	7.92	6.75	6.95
Copper	3100	47000	70	mg/kg	8.37	6.2	20	11.4	12.9
Cyanide	23	150	NA	mg/kg					
Iron	55000	820000	NA	mg/kg	8910	9470	14200	11200	11800
Lead	400	800	120	mg/kg	28.8	9.33	75.4 JL	21.3 JL	36.8 D
Manganese	1800	26000	220	mg/kg	<u>805</u>	<u>733</u>	<u>1140</u>	<u>957</u>	<u>962</u> JKD
Mercury	11	46	0.1	mg/kg	0.0806	0.0149	<u>0.194</u> JL	0.0402 JL	<u>0.153</u> JH
Nickel	1500	22000	38	mg/kg	14.9 JL	14.8 JL	29.9 JL	19.2 JL	18.3
Selenium	390	5800	0.52	mg/kg	<u>1.25</u> JQ	<u>1.16</u> JQ	<u>1.06</u>	<u>0.935</u> JQ	<u>0.677</u> JQ
Silver	390	5800	560	mg/kg	2.57 U	2.62 U	1.04 U	1.09 U	0.121 U
Thallium	0.78	12	1	mg/kg	<u>2.57</u> U	<u>2.62</u> U	0.169 JQL	<u>1.09</u> U	<u>1.41</u> UD
Vanadium	390	5800	2	mg/kg	<u>23.3</u> JK	<u>26.9</u> JK	<u>28.1</u> JH	<u>32.8</u> JH	<u>27</u>
Zinc	23000	350000	120	mg/kg	35.2 JL	29.9 JL	<u>120</u>	50.2	58.2
NOTES: Bold = Exceedances of Residential Human Screening Values. Bold Italic = Exceedances of Industrial Human Health Screening Values. <u>Underlined</u> = Exceedances of Ecological Screening Values. *Ecological screening level for chromium used for hexavalent chromium. J = Indicates that the concentration is an estimated value. U = Indicates the analyte was analyzed for but not detected. mg/kg = Milligrams per kilogram. NA = Not available. Qualifiers based on "Result_Qualifier" field of EPA provided sample databa Human Health Screening Values from: EPA. 2018. Region 9. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. San Francisco, CA: U. S. Environmental Protection Agency, Region 9; October 2018. Ecological Screening Values are protective of most sensitive receptor from: TCEQ. 2018. TCEQ’s Ecological Benchmark Tables. Soil Benchmarks. TCEQ publication RG-263b.									

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Chemical	Residential Human Health Screening Value	Industrial Human Health Screening Value	Ecological Screening Value	Sample ID: Date: Depth (in): Units	A1-160920-SS-18-01 9/20/2016 12-18	A2-160412-SS-03-01 4/12/2016 0-3	A2-160412-SS-03-02 4/12/2016 0-3	A2-160922-SS-18-01 9/22/2016 12-18	A3-160412-SS-03-01 4/12/2016 0-3
	Value	Value	Value	Units					
Aluminum	77000	1100000	NA	mg/kg	5140	12200 JK	13500 JK	8910	13900 JK
Antimony	31	470	5	mg/kg	2.63 UJL	0.587 UJ	0.37 UJ	1.04 U	0.543 UJ
Arsenic	0.68	3	18	mg/kg	5.2 JL	9.24	10.1	7.23	9.85
Barium	15000	220000	330	mg/kg	48.2	65.6	65.9	65.1	75.6
Beryllium	160	2300	10	mg/kg	0.34 JQ	0.618	0.659	0.56 JQ	0.707
Cadmium	NA	NA	32	mg/kg	2.63 UJL	0.417	0.429	0.247 JQ	0.875
Chromium	120000	1800000	0.4	mg/kg	<u>8.87</u> JL	<u>36.4</u> JL	<u>37.5</u> JK	<u>15.1</u>	<u>60.5</u> JL
Chromium, Hexavalent*	0.3	6.3	0.4	mg/kg	<u>2.2</u> UJL	<u>228</u> U	<u>235</u> U	<u>2.24</u> UJL	<u>243</u> U
Cobalt	23	350	13	mg/kg	5.12 JL	7.39	7.55	6.84	8.06
Copper	3100	47000	70	mg/kg	5.8 JL	12.7	12.9	9.22	16.8
Cyanide	23	150	NA	mg/kg					
Iron	55000	820000	NA	mg/kg	8670	14100	16000	12400	15700
Lead	400	800	120	mg/kg	8.36 JL	36.9 D	33.7 D	13.6	55.2 D
Manganese	1800	26000	220	mg/kg	<u>589</u> JK	<u>902</u> JKD	<u>928</u> JKD	<u>828</u>	<u>982</u> JKD
Mercury	11	46	0.1	mg/kg	0.016	<u>0.398</u> JK	<u>0.47</u> JK	0.035	<u>0.776</u> JK
Nickel	1500	22000	38	mg/kg	13.6 JL	19.9	20.8	18.4	24.1
Selenium	390	5800	0.52	mg/kg	<u>1.23</u> JQL	0.281 UJ	0.305 UJ	<u>1.04</u> JQ	0.3 UJ
Silver	390	5800	560	mg/kg	2.63 U	0.129 U	0.14 U	1.04 U	0.138 U
Thallium	0.78	12	1	mg/kg	2.63 UJL	1.5 UD	1.63 UD	1.04 U	1.6 UD
Vanadium	390	5800	2	mg/kg	<u>24.8</u> JL	<u>29.6</u>	<u>33.8</u>	<u>38.5</u>	<u>32.9</u>
Zinc	23000	350000	120	mg/kg	27.3 JL	65.2 JH	66.2 JH	72.7	73.9 JH
NOTES: Bold = Exceedances of Residential Human Screening Values. Bold Italic = Exceedances of Industrial Human Health Screening Values. <u>Underlined</u> = Exceedances of Ecological Screening Values. *Ecological screening level for chromium used for hexavalent chromium. J = Indicates that the concentration is an estimated value. U = Indicates the analyte was analyzed for but not detected. mg/kg = Milligrams per kilogram. NA = Not available. Qualifiers based on "Result_Qualifier" field of EPA provided sample databa Human Health Screening Values from: EPA. 2018. Region 9. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. San Francisco, CA: U. S. Environmental Protection Agency, Region 9; October 2018. Ecological Screening Values are protective of most sensitive receptor from: TCEQ. 2018. TCEQ’s Ecological Benchmark Tables. Soil Benchmarks. TCEQ publication RG-263b.									

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Chemical	Residential	Industrial	Ecological	Sample ID:	A3-160922-SS-18-01	A5-160922-SS-06-01	A5-160922-SS-18-01	A5-160922-SS-18-02	A6-160412-SS-03-01
	Human	Human		Date:	9/22/2016	9/22/2016	9/22/2016	9/22/2016	4/12/2016
	Health	Health		Depth (in):	12-18	0-6	12-18	12-18	0-3
Screening	Screening	Screening	Screening	Units					
Value	Value	Value	Value						
Aluminum	77000	1100000	NA	mg/kg	11000	3310	16200	12000	7610 JK
Antimony	31	470	5	mg/kg	1.15 U	1	0.583	0.612	0.53 UJ
Arsenic	0.68	3	18	mg/kg	8.02	4.13	9.15	7.25	7.68
Barium	15000	220000	330	mg/kg	78.6	40.5	116	86	62.6
Beryllium	160	2300	10	mg/kg	0.683 JQ	0.234	0.94	0.707	0.553
Cadmium	NA	NA	32	mg/kg	0.295 JQ	0.417	0.291	0.224	1.46
Chromium	120000	1800000	0.4	mg/kg	<u>18.9</u>	<u>50.7</u>	<u>20.5</u>	<u>16.1</u>	<u>102</u> JL
Chromium, Hexavalent*	0.3	6.3	0.4	mg/kg	<u>2.37</u> UJL	<u>2.12</u>	<u>2.54</u>	<u>2.51</u>	<u>219</u> U
Cobalt	23	350	13	mg/kg	8	3.15	9.69	7.24	6.96
Copper	3100	47000	70	mg/kg	11.5	10.7	14.5	11.2	18.8
Cyanide	23	150	NA	mg/kg					
Iron	55000	820000	NA	mg/kg	14200	7800	17600	13400	20900
Lead	400	800	120	mg/kg	15.4	70.2	17.2	16.1	<u>149</u> D
Manganese	1800	26000	220	mg/kg	<u>947</u>	<u>345</u>	<u>992</u>	<u>803</u>	<u>699</u> JKD
Mercury	11	46	0.1	mg/kg	0.0266	0.0857	0.0184	0.0312	<u>0.54</u> JK
Nickel	1500	22000	38	mg/kg	22	30.2	23.9	19.3	35.9
Selenium	390	5800	0.52	mg/kg	<u>1.05</u> JQ	<u>1</u>	<u>0.66</u>	<u>0.591</u>	0.281 UJ
Silver	390	5800	560	mg/kg	1.15 U	1	0.583	0.612	0.129 U
Thallium	0.78	12	1	mg/kg	0.169 JQ	<u>1</u>	0.221	0.18	<u>1.5</u> UD
Vanadium	390	5800	2	mg/kg	<u>44.5</u>	<u>13.5</u>	<u>52.3</u>	<u>41.9</u>	<u>24.1</u>
Zinc	23000	350000	120	mg/kg	46.9	38.3	58.5	41.9	94.3 JH
NOTES: Bold = Exceedances of Residential Human Screening Values. <i>Bold Italic</i> = Exceedances of Industrial Human Health Screening Values. <u>Underlined</u> = Exceedances of Ecological Screening Values. *Ecological screening level for chromium used for hexavalent chromium. J = Indicates that the concentration is an estimated value. U = Indicates the analyte was analyzed for but not detected. mg/kg = Milligrams per kilogram. NA = Not available. Qualifiers based on "Result_Qualifier" field of EPA provided sample databa Human Health Screening Values from: EPA. 2018. Region 9. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. San Francisco, CA: U. S. Environmental Protection Agency, Region 9; October 2018. Ecological Screening Values are protective of most sensitive receptor from: TCEQ. 2018. TCEQ's Ecological Benchmark Tables. Soil Benchmarks. TCEQ publication RG-263b.									

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Chemical	Residential	Industrial	Ecological Screening Value	Sample ID:	A6-160922-SS-18-01	A7-160412-SS-03-01	A7-160921-SS-18-01	A8-160921-SS-06-01	A8-160921-SS-18-01				
	Human	Human		Date:	9/22/2016	4/12/2016	9/21/2016	9/21/2016	9/21/2016				
	Health	Health		Depth (in):	12-18	0-3	12-18	0-6	12-18				
	Screening	Screening		Units									
Value	Value	Value											
Aluminum	77000	1100000	NA	mg/kg	9010	10700	JK	11600	4300	5130			
Antimony	31	470	5	mg/kg	1.11	0.713	UJ	1.13	UJL	1	UJL	0.479	JQL
Arsenic	0.68	3	18	mg/kg	<i>4.99</i>	<i>6.28</i>		<i>6.74</i>	<i>3.62</i>	JL		<i>4.19</i>	JL
Barium	15000	220000	330	mg/kg	64.5	77		84.1	32.5			48.5	
Beryllium	160	2300	10	mg/kg	0.438	0.552		0.564	JQ	0.195	JQL	0.273	JQL
Cadmium	NA	NA	32	mg/kg	0.251	1.18		0.321	JQL	0.253	JQ	5.98	
Chromium	120000	1800000	0.4	mg/kg	<u>16</u>	<u>111</u>	JL	<u>20.5</u>	<u>20.2</u>			<u>110</u>	
Chromium, Hexavalent*	0.3	6.3	0.4	mg/kg	<i>2.41</i>	<i>235</i>	U	<i>2.35</i>	UJL	<i>2.14</i>	U	<i>10.4</i>	
Cobalt	23	350	13	mg/kg	4.88	6.58		6.3		3.66		3.94	
Copper	3100	47000	70	mg/kg	7.98	19.3		11.4	JL	6.66		9.68	
Cyanide	23	150	NA	mg/kg									
Iron	55000	820000	NA	mg/kg	10200	11800		11800		5800		8910	
Lead	400	800	120	mg/kg	25.1	105	D	25.4		23.2	JL	45.9	JL
Manganese	1800	26000	220	mg/kg	<u>643</u>	<u>789</u>	JKD	<u>865</u>		<u>664</u>		<u>419</u>	
Mercury	11	46	0.1	mg/kg	0.0285	<u>0.622</u>	JK	0.0579		<u>0.167</u>	JL	<u>0.41</u>	JL
Nickel	1500	22000	38	mg/kg	14.3	23.6		19		13.6	JL	11.2	JL
Selenium	390	5800	0.52	mg/kg	<u>1.11</u>	0.298	UJ	<u>0.658</u>	JQL	<u>0.852</u>	JQ	<u>0.797</u>	JQ
Silver	390	5800	560	mg/kg	1.11	0.137	U	1.13	U	1	U	1.05	U
Thallium	0.78	12	1	mg/kg	<i>1.11</i>	<i>1.59</i>	UD	<i>1.13</i>	U	<i>1</i>	U	<i>1.05</i>	U
Vanadium	390	5800	2	mg/kg	<u>27.9</u>	<u>24.1</u>		<u>35.4</u>	JH	<u>13.3</u>	JH	<u>19.7</u>	JH
Zinc	23000	350000	120	mg/kg	34.3	110	JH	45.8	JH	41.4		27.8	
NOTES: Bold = Exceedances of Residential Human Screening Values. <i>Bold Italic</i> = Exceedances of Industrial Human Health Screening Values. <u>Underlined</u> = Exceedances of Ecological Screening Values. *Ecological screening level for chromium used for hexavalent chromium. J = Indicates that the concentration is an estimated value. U = Indicates the analyte was analyzed for but not detected. mg/kg = Milligrams per kilogram. NA = Not available. Qualifiers based on "Result_Qualifier" field of EPA provided sample databa Human Health Screening Values from: EPA. 2018. Region 9. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. San Francisco, CA: U. S. Environmental Protection Agency, Region 9; October 2018. Ecological Screening Values are protective of most sensitive receptor from: TCEQ. 2018. TCEQ’s Ecological Benchmark Tables. Soil Benchmarks. TCEQ publication RG-263b.													

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Chemical	Residential	Industrial	Ecological Screening Value	Sample ID:	A9-160921-SS-06-01	A9-160921-SS-18-01	A9-160921-SS-18-02	B0-160920-SS-06-01	B0-160920-SS-06-02
	Human	Human		Date:	9/21/2016	9/21/2016	9/21/2016	9/20/2016	9/20/2016
	Health	Health		Depth (in):	0-6	12-18	12-18	0-6	0-6
Value	Screening	Screening	Value	Units					
Aluminum	77000	1100000	NA	mg/kg	4510	10700	11300	6390	6500
Antimony	31	470	5	mg/kg	1.05 UJL	1.08 UJL	1.16 UJL	0.51 UJL	0.519 UJL
Arsenic	0.68	3	18	mg/kg	<i>5.36</i> JL	<i>6.43</i> JL	<i>6.19</i> JL	<i>5.97</i> JL	<i>5.61</i> JL
Barium	15000	220000	330	mg/kg	50.5	80.3	85.8	70.6	64.5
Beryllium	160	2300	10	mg/kg	0.244 JQL	0.491 JQL	0.565 JQL	0.577	0.527
Cadmium	NA	NA	32	mg/kg	0.592 JQ	0.243 JQ	0.256 JQ	0.292 JQ	0.27 JQ
Chromium	120000	1800000	0.4	mg/kg	<u>30.2</u>	<u>17.6</u>	<u>20.9</u>	<u>23.7</u>	<u>22.9</u>
Chromium, Hexavalent*	0.3	6.3	0.4	mg/kg	<u>2.15</u> U	<u>2.33</u> U	<u>2.35</u> U	<u>2.19</u> UJL	<u>2.19</u> UJL
Cobalt	23	350	13	mg/kg	4.85	6.1	6.5	6.38	5.8
Copper	3100	47000	70	mg/kg	13.9	8.79	9.7	8.83	8.24
Cyanide	23	150	NA	mg/kg					
Iron	55000	820000	NA	mg/kg	7970	13100	12500	10400	9210
Lead	400	800	120	mg/kg	60.4 JL	20.5 JL	23.1 JL	19.6	18.8
Manganese	1800	26000	220	mg/kg	<u>978</u>	<u>787</u>	<u>768</u>	<u>822</u>	<u>858</u>
Mercury	11	46	0.1	mg/kg	<u>0.286</u> JL	0.0323 JL	0.0192 JL	0.0848	0.0769
Nickel	1500	22000	38	mg/kg	19.7 JL	17.4 JL	18.1 JL	16.9 JL	15 JL
Selenium	390	5800	0.52	mg/kg	<u>0.923</u> JQ	<u>0.987</u> JQ	<u>1.13</u> JQ	<u>1.01</u>	<u>0.822</u>
Silver	390	5800	560	mg/kg	1.05 U	1.08 U	1.16 U	0.51 U	0.519 U
Thallium	0.78	12	1	mg/kg	<u>1.05</u> U	<u>1.08</u> U	<u>1.16</u> U	0.132 JQ	0.129 JQ
Vanadium	390	5800	2	mg/kg	<u>16.4</u> JH	<u>33.3</u> JH	<u>36.6</u> JH	<u>32.2</u> JK	<u>29.3</u> JK
Zinc	23000	350000	120	mg/kg	87	40.8	44	34.8 JL	32.1 JL
NOTES: Bold = Exceedances of Residential Human Screening Values. <i>Bold Italic</i> = Exceedances of Industrial Human Health Screening Values. <u>Underlined</u> = Exceedances of Ecological Screening Values. *Ecological screening level for chromium used for hexavalent chromium. J = Indicates that the concentration is an estimated value. U = Indicates the analyte was analyzed for but not detected. mg/kg = Milligrams per kilogram. NA = Not available. Qualifiers based on "Result Qualifier" field of EPA provided sample databa Human Health Screening Values from: EPA. 2018. Region 9. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. San Francisco, CA: U. S. Environmental Protection Agency, Region 9; October 2018. Ecological Screening Values are protective of most sensitive receptor from: TCEQ. 2018. TCEQ’s Ecological Benchmark Tables. Soil Benchmarks. TCEQ publication RG-263b.									

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	Residential Human Health Screening Value	Industrial Human Health Screening Value	Ecological Screening Value	Sample ID: Date: Depth (in): Units	B0-160920-SS-18-01 9/20/2016 12-18 mg/kg	B10-160921-SS-06-01 9/21/2016 0-6 mg/kg	B10-160921-SS-18-01 9/21/2016 12-18 mg/kg	B1-160412-SS-03-01 4/12/2016 0-3 mg/kg	B1-160920-SS-18-01 9/20/2016 12-18 mg/kg
Chemical	Value	Value	Value	Units					
Aluminum	77000	1100000	NA	mg/kg	4960	5900	11200	10900 JK	7040
Antimony	31	470	5	mg/kg	0.513 UJL	1.05 UJL	1.11 UJL	0.706 UJ	2.65 UJL
Arsenic	0.68	3	18	mg/kg	4.83 JL	4.37 JL	7.22 JL	10.3	5.73 JL
Barium	15000	220000	330	mg/kg	54.2	55.7	76.7	74.7	68
Beryllium	160	2300	10	mg/kg	0.444 JQ	0.355 JQL	0.433 JQL	0.648	0.544 JQ
Cadmium	NA	NA	32	mg/kg	0.173 JQ	0.363 JQ	0.251 JQ	0.377	2.65 UJL
Chromium	120000	1800000	0.4	mg/kg	<u>10.4</u>	<u>30.9</u>	<u>17.6</u>	<u>37.8</u> JK	<u>13.3</u> JL
Chromium, Hexavalent*	0.3	6.3	0.4	mg/kg	2.18 UJL	2.16 U	2.34 U	2.32 U	2.22 UJL
Cobalt	23	350	13	mg/kg	5.11	4.49	6.34	7.87	6.72 JL
Copper	3100	47000	70	mg/kg	5.59	9.17	8.63	14.3	8.6 JL
Cyanide	23	150	NA	mg/kg					
Iron	55000	820000	NA	mg/kg	8400	9410	12900	13900	10500
Lead	400	800	120	mg/kg	8.94	65.7 JL	21.6 JL	28.8 D	12.1 JL
Manganese	1800	26000	220	mg/kg	<u>577</u>	<u>471</u>	<u>775</u>	<u>978</u> JKD	<u>791</u> JK
Mercury	11	46	0.1	mg/kg	0.0172	0.0802 JL	0.0216 JL	<u>0.242</u> JH	0.0341
Nickel	1500	22000	38	mg/kg	13.2 JL	13.3 JL	16.4 JL	21.1	17.7 JL
Selenium	390	5800	0.52	mg/kg	<u>0.711</u>	<u>1</u> JQ	<u>1.08</u> JQ	0.305 U	<u>1.11</u> JQL
Silver	390	5800	560	mg/kg	0.513 U	1.05 U	1.11 U	0.14 U	2.65 U
Thallium	0.78	12	1	mg/kg	0.119 JQ	1.05 U	1.11 U	0.653 UD	2.65 UJL
Vanadium	390	5800	2	mg/kg	<u>27.7</u> JK	<u>19.4</u> JH	<u>30.9</u> JH	<u>32.4</u>	<u>31.4</u> JL
Zinc	23000	350000	120	mg/kg	25.8 JL	51.5	39.4	58.5	35.3 JL
NOTES: Bold = Exceedances of Residential Human Screening Values. Bold Italic = Exceedances of Industrial Human Health Screening Values. <u>Underlined</u> = Exceedances of Ecological Screening Values. *Ecological screening level for chromium used for hexavalent chromium. J = Indicates that the concentration is an estimated value. U = Indicates the analyte was analyzed for but not detected. mg/kg = Milligrams per kilogram. NA = Not available. Qualifiers based on "Result_Qualifier" field of EPA provided sample databa Human Health Screening Values from: EPA. 2018. Region 9. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. San Francisco, CA: U. S. Environmental Protection Agency, Region 9; October 2018. Ecological Screening Values are protective of most sensitive receptor from: TCEQ. 2018. TCEQ's Ecological Benchmark Tables. Soil Benchmarks. TCEQ publication RG-263b.									

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Chemical	Residential	Industrial	Ecological Screening Value	Sample ID:	B2-160412-SS-03-01	B2-160922-SS-18-01	B5-160922-SS-06-01	B5-160922-SS-18-01	B6-160412-SS-03-01
	Human	Human		Date:	4/12/2016	9/22/2016	9/22/2016	9/22/2016	4/12/2016
	Health	Health		Depth (in):	0-3	12-18	0-6	12-18	0-3
Value	Value	Value	Units						
Aluminum	77000	1100000	NA	mg/kg	12200 JK	11500	3370	13800	5200 JK
Antimony	31	470	5	mg/kg	1.58 UJ	1.13 U	0.254	0.618	4.27 JL
Arsenic	0.68	3	18	mg/kg	<i>9.08</i>	<i>8.63</i>	<i>7.3</i>	<i>5.47</i>	<i>5.81</i>
Barium	15000	220000	330	mg/kg	84.5	74.4	38.2	86.4	48.7
Beryllium	160	2300	10	mg/kg	0.651	0.667 JQ	0.281	0.766	0.42
Cadmium	NA	NA	32	mg/kg	2.42	0.424 JQ	1.36	0.194	1.49
Chromium	120000	1800000	0.4	mg/kg	<u>530</u> JL	<u>30.1</u>	<u>31.1</u>	<u>15.8</u>	<u>94.5</u> JL
Chromium, Hexavalent*	0.3	6.3	0.4	mg/kg	<u>2.31</u> U	<u>2.34</u> UJL	<u>2.37</u>	<u>2.62</u>	<u>2.19</u> U
Cobalt	23	350	13	mg/kg	7.98	8.04	4.37	8.9	5.26
Copper	3100	47000	70	mg/kg	29.1	12.3	7.35	10.9	15.3
Cyanide	23	150	NA	mg/kg					
Iron	55000	820000	NA	mg/kg	16000	14700	13200	13300	13100
Lead	400	800	120	mg/kg	<u>209</u> D	18.1	46.2	15.9	<u>446</u> D
Manganese	1800	26000	220	mg/kg	<u>995</u> JKD	<u>1060</u>	<u>593</u>	<u>920</u>	<u>525</u> JKD
Mercury	11	46	0.1	mg/kg	<u>4.02</u> UJ	<u>0.181</u>	<u>0.259</u>	0.0359	<u>0.646</u> JH
Nickel	1500	22000	38	mg/kg	<u>55.3</u>	23.5	11.6	16.8	17.6
Selenium	390	5800	0.52	mg/kg	0.296 UJ	<u>1.15</u>	0.212	0.387	0.231 UJ
Silver	390	5800	560	mg/kg	0.223 JQ	1.13 U	0.579	0.618	0.106 U
Thallium	0.78	12	1	mg/kg	<u>1.58</u> UD	0.164 JQ	0.579	0.231	<u>1.24</u> UD
Vanadium	390	5800	2	mg/kg	<u>30.1</u>	<u>44.2</u>	<u>14</u>	<u>38</u>	<u>17</u>
Zinc	23000	350000	120	mg/kg	112 JH	50.2	24.3	37.7	67.3 JH
NOTES: Bold = Exceedances of Residential Human Screening Values. <i>Bold Italic</i> = Exceedances of Industrial Human Health Screening Values. <u>Underlined</u> = Exceedances of Ecological Screening Values. *Ecological screening level for chromium used for hexavalent chromium. J = Indicates that the concentration is an estimated value. U = Indicates the analyte was analyzed for but not detected. mg/kg = Milligrams per kilogram. NA = Not available. Qualifiers based on "Result Qualifier" field of EPA provided sample databa Human Health Screening Values from: EPA. 2018. Region 9. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. San Francisco, CA: U. S. Environmental Protection Agency, Region 9; October 2018. Ecological Screening Values are protective of most sensitive receptor from: TCEQ. 2018. TCEQ’s Ecological Benchmark Tables. Soil Benchmarks. TCEQ publication RG-263b.									

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Chemical	Residential	Industrial	Ecological Screening Value	Sample ID:	B6-160922-SS-18-01	B7-160412-SS-03-01	B7-160921-SS-18-01	B8-160921-SS-06-01	B8-160921-SS-18-01
	Human	Human		Date:	9/22/2016	4/12/2016	9/21/2016	9/21/2016	9/21/2016
	Health	Health		Depth (in):	12-18	0-3	12-18	0-6	12-18
Value	Screening	Screening	Value	Units					
Aluminum	77000	1100000	NA	mg/kg	16600	13500 JK	14400	10400	5410
Antimony	31	470	5	mg/kg	0.572	1.49 UJ	0.573 UJL	1.01 UJL	1.02 UJL
Arsenic	0.68	3	18	mg/kg	<i>7.14</i>	<i>8.04</i>	<i>7.03</i>	<i>6.07</i> JL	<i>6.16</i> JL
Barium	15000	220000	330	mg/kg	126	94.3	89.5	83.3	52.1
Beryllium	160	2300	10	mg/kg	1.09	0.736	0.775	0.507 JQL	0.304 JQL
Cadmium	NA	NA	32	mg/kg	0.309	2.84	0.33 JQL	0.891 JQ	0.933 JQ
Chromium	120000	1800000	0.4	mg/kg	<u>23.2</u>	<u>239</u> JL	<u>18.2</u>	<u>143</u>	<u>223</u>
Chromium, Hexavalent*	0.3	6.3	0.4	mg/kg	<u>2.48</u>	<u>251</u> U	<u>2.44</u> UJL	<u>2.19</u> U	<u>0.799</u> JQ
Cobalt	23	350	13	mg/kg	9.55	8.45	7.1	6.4	4.63
Copper	3100	47000	70	mg/kg	14.6	22.1	11.6 JL	12.1	7.55
Cyanide	23	150	NA	mg/kg					
Iron	55000	820000	NA	mg/kg	18100	14000	13500	11700	9600
Lead	400	800	120	mg/kg	20.2	88.9 D	18.5	<u>194</u> JL	21.7 JL
Manganese	1800	26000	220	mg/kg	<u>942</u>	<u>995</u> JKD	<u>1080</u>	<u>828</u>	<u>619</u>
Mercury	11	46	0.1	mg/kg	0.027	<u>2.33</u> JH	0.0455	<u>0.341</u> JL	<u>0.529</u> JL
Nickel	1500	22000	38	mg/kg	23.1	<u>78.1</u>	20.4	30.5 JL	<u>78.2</u> JL
Selenium	390	5800	0.52	mg/kg	0.508	0.28 UJ	<u>0.77</u> JL	<u>1.08</u>	<u>0.856</u> JQ
Silver	390	5800	560	mg/kg	0.572	0.129 U	0.573 U	1.01 U	1.02 U
Thallium	0.78	12	1	mg/kg	0.267	<u>1.5</u> UD	0.192 JQ	<u>1.01</u> U	<u>1.02</u> U
Vanadium	390	5800	2	mg/kg	<u>51.1</u>	<u>31.7</u>	<u>37.8</u> JH	<u>30.1</u> JH	<u>24.3</u> JH
Zinc	23000	350000	120	mg/kg	53.9	<u>124</u>	45.4 JH	54.5	37.3
NOTES: Bold = Exceedances of Residential Human Screening Values. <i>Bold Italic</i> = Exceedances of Industrial Human Health Screening Values. <u>Underlined</u> = Exceedances of Ecological Screening Values. *Ecological screening level for chromium used for hexavalent chromium. J = Indicates that the concentration is an estimated value. U = Indicates the analyte was analyzed for but not detected. mg/kg = Milligrams per kilogram. NA = Not available. Qualifiers based on "Result Qualifier" field of EPA provided sample databa Human Health Screening Values from: EPA. 2018. Region 9. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. San Francisco, CA: U. S. Environmental Protection Agency, Region 9; October 2018. Ecological Screening Values are protective of most sensitive receptor from: TCEQ. 2018. TCEQ’s Ecological Benchmark Tables. Soil Benchmarks. TCEQ publication RG-263b.									

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Chemical	Residential	Industrial	Ecological Screening Value	Sample ID:	B9-160921-SS-06-01	B9-160921-SS-18-01	BKG1-161013-SS-06-01	BKG1-161013-SS-18-01	C0-160920-SS-06-01
	Human	Human		Date:	9/21/2016	9/21/2016	10/13/2016	10/13/2016	9/20/2016
	Health	Health		Depth (in):	0-6	12-18	0-6	6-18	0-6
Value	Screening	Screening	Value	Units					
Aluminum	77000	1100000	NA	mg/kg	4670	4810	5180	3690	7350
Antimony	31	470	5	mg/kg	0.975 UJL	1.02 UJL	0.533 U	0.512 U	0.539 UJL
Arsenic	0.68	3	18	mg/kg	3.97 JL	6.23 JL	4.73	3.04	5.3 JL
Barium	15000	220000	330	mg/kg	97.2	39.6	93.9	64.9	84.9
Beryllium	160	2300	10	mg/kg	0.276 JQL	0.297 JQL	0.38 JQ	0.252 JQ	0.703
Cadmium	NA	NA	32	mg/kg	0.33 JQ	0.122 JQ	0.317 JQ	0.182 JQ	0.35 JQ
Chromium	120000	1800000	0.4	mg/kg	<u>25.6</u>	<u>11.5</u>	<u>9.18</u>	<u>5.44</u>	<u>32.9</u>
Chromium, Hexavalent*	0.3	6.3	0.4	mg/kg	<u>2.13</u> U	<u>2.11</u> U	<u>2.29</u> UJL	<u>2.12</u> UJL	<u>2.27</u> UJL
Cobalt	23	350	13	mg/kg	5.8	4.63	5.43	3.28	7.19
Copper	3100	47000	70	mg/kg	9.14	5.08	8.38	4.79	11
Cyanide	23	150	NA	mg/kg					
Iron	55000	820000	NA	mg/kg	7410	13100	6850	4720	10800
Lead	400	800	120	mg/kg	84.9 JL	20 JL	65.6	25.5	20.2
Manganese	1800	26000	220	mg/kg	<u>901</u>	<u>490</u>	<u>790</u>	<u>547</u>	<u>825</u>
Mercury	11	46	0.1	mg/kg	<u>0.102</u> JL	0.0149 JL	0.0413	0.0183	<u>0.117</u>
Nickel	1500	22000	38	mg/kg	16.5 JL	12.7 JIL	15.2	9.32	18.8 JL
Selenium	390	5800	0.52	mg/kg	<u>0.941</u> JQ	<u>1.01</u> JQ	<u>0.648</u>	0.462 JQ	<u>1.09</u>
Silver	390	5800	560	mg/kg	0.975 U	1.02 U	0.533 U	0.512 U	0.539 U
Thallium	0.78	12	1	mg/kg	0.975 U	<u>1.02</u> U	0.0969 JQ	0.512 U	0.163 JQ
Vanadium	390	5800	2	mg/kg	<u>17.5</u> JH	<u>23.8</u> JH	<u>20.7</u>	<u>13.4</u>	<u>37.4</u> JK
Zinc	23000	350000	120	mg/kg	46.3	25.1	53.9	29	39.3 JL
NOTES: Bold = Exceedances of Residential Human Screening Values. Bold Italic = Exceedances of Industrial Human Health Screening Values. <u>Underlined</u> = Exceedances of Ecological Screening Values. *Ecological screening level for chromium used for hexavalent chromium. J = Indicates that the concentration is an estimated value. U = Indicates the analyte was analyzed for but not detected. mg/kg = Milligrams per kilogram. NA = Not available. Qualifiers based on "Result_Qualifier" field of EPA provided sample databa Human Health Screening Values from: EPA. 2018. Region 9. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. San Francisco, CA: U. S. Environmental Protection Agency, Region 9; October 2018. Ecological Screening Values are protective of most sensitive receptor from: TCEQ. 2018. TCEQ’s Ecological Benchmark Tables. Soil Benchmarks. TCEQ publication RG-263b.									

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Chemical	Residential	Industrial	Ecological Screening Value	Sample ID:	C0-160920-SS-18-01	C10-160921-SS-06-01	C10-160921-SS-18-01	C1-160412-SS-03-01	C1-160920-SS-18-01
	Human	Human		Date:	9/20/2016	9/21/2016	9/21/2016	4/12/2016	9/20/2016
	Health	Health		Depth (in):	12-18	0-6	12-18	0-3	12-18
Value	Screening	Screening	Value	Units					
Aluminum	77000	1100000	NA	mg/kg	8510	7710	3790	12400 JK	10500
Antimony	31	470	5	mg/kg	0.55 UJL	1.03 UJL	1.05 UJL	0.859 UJ	1.22 UJL
Arsenic	0.68	3	18	mg/kg	<i>5.19</i> JL	<i>6.24</i> JL	<i>5.49</i> JL	<i>9.27</i>	<i>5.45</i> JL
Barium	15000	220000	330	mg/kg	90.3	71	56	89.6	78.7
Beryllium	160	2300	10	mg/kg	0.745	0.461 JQL	0.295 JQL	0.734	0.617 JQ
Cadmium	NA	NA	32	mg/kg	0.24 JQ	0.477 JQ	0.137 JQ	0.622	0.27 JQL
Chromium	120000	1800000	0.4	mg/kg	<u>16.1</u>	<u>112</u>	<u>16.3</u>	<u>97.6</u> JK	<u>19.3</u> JL
Chromium, Hexavalent*	0.3	6.3	0.4	mg/kg	<i>2.26</i> UJL	<i>2.15</i> U	<i>2.14</i> U	<i>2.26</i> U	<i>2.5</i> UJL
Cobalt	23	350	13	mg/kg	7.5	6.58	6.69	8.45	6.93 JL
Copper	3100	47000	70	mg/kg	9.37	11.5	4.81	15.1	9.69 JL
Cyanide	23	150	NA	mg/kg					
Iron	55000	820000	NA	mg/kg	11600	15000	14400	13700	10400
Lead	400	800	120	mg/kg	12.3	61.1 JL	8.94 JL	32.9 D	13.1 JL
Manganese	1800	26000	220	mg/kg	<u>790</u>	<u>653</u>	<u>736</u>	<u>1030</u> JKD	<u>1040</u> JK
Mercury	11	46	0.1	mg/kg	0.017	<u>0.71</u> JL	0.0386 JL	<u>1.49</u>	0.0497
Nickel	1500	22000	38	mg/kg	19.4 JL	17.8 JL	12.4 JL	23.9	18 JL
Selenium	390	5800	0.52	mg/kg	<u>1.07</u>	<u>1.25</u>	<u>0.982</u> JQ	0.278 U	<u>0.801</u> JQL
Silver	390	5800	560	mg/kg	0.55 U	1.03 U	1.05 U	0.128 U	1.22 U
Thallium	0.78	12	1	mg/kg	0.165 JQ	<i>1.03</i> U	<i>1.05</i> U	0.594 UD	0.171 JQL
Vanadium	390	5800	2	mg/kg	<u>41</u> JK	<u>26.5</u> JH	<u>17</u> JH	<u>32</u>	<u>35.9</u> JL
Zinc	23000	350000	120	mg/kg	35.5 JL	55.1	26.3	57.9	32.9 JL
NOTES: Bold = Exceedances of Residential Human Screening Values. <i>Bold Italic</i> = Exceedances of Industrial Human Health Screening Values. <u>Underlined</u> = Exceedances of Ecological Screening Values. *Ecological screening level for chromium used for hexavalent chromium. J = Indicates that the concentration is an estimated value. U = Indicates the analyte was analyzed for but not detected. mg/kg = Milligrams per kilogram. NA = Not available. Qualifiers based on "Result_Qualifier" field of EPA provided sample databa Human Health Screening Values from: EPA. 2018. Region 9. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. San Francisco, CA: U. S. Environmental Protection Agency, Region 9; October 2018. Ecological Screening Values are protective of most sensitive receptor from: TCEQ. 2018. TCEQ’s Ecological Benchmark Tables. Soil Benchmarks. TCEQ publication RG-263b.									

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	Residential Human Health Screening Value	Industrial Human Health Screening Value	Ecological Screening Value	Sample ID: Date: Depth (in): Units	C2-160412-SS-03-01 4/12/2016 0-3	C2-160922-SS-12-01 9/22/2016 6-12	C2-160922-SS-18-01 9/22/2016 12-18	C5-160922-SS-06-01 9/22/2016 0-6	C5-160922-SS-18-01 9/22/2016 12-18
Chemical									
Aluminum	77000	1100000	NA	mg/kg	13300 JK	13900	13100	2050	17900
Antimony	31	470	5	mg/kg	<u>33.1</u> UJ	0.579 U	1.15 U	0.349 JQ	0.618 U
Arsenic	0.68	3	18	mg/kg	<u>14.9</u> D	<u>9.11</u>	<u>7.9</u>	<u>7.83</u>	<u>9.8</u>
Barium	15000	220000	330	mg/kg	95.3	131	107	52.2	131
Beryllium	160	2300	10	mg/kg	0.699	0.881	0.791 JQ	0.335 JQ	1.16
Cadmium	NA	NA	32	mg/kg	30.7	0.703	0.792 JQ	0.941	0.363 JQ
Chromium	120000	1800000	0.4	mg/kg	<u>11400</u> JLD	<u>139</u>	<u>137</u>	<u>32.3</u>	<u>24.3</u>
Chromium, Hexavalent*	0.3	6.3	0.4	mg/kg	<u>2.34</u> U	<u>2.42</u> U	<u>2.4</u> UJL	<u>2.06</u> UJL	<u>2.53</u> UJL
Cobalt	23	350	13	mg/kg	8.01	10.1	9.37	5.64	11.6
Copper	3100	47000	70	mg/kg	<u>736</u>	17.7	19.5	14.1	17.9
Cyanide	23	150	NA	mg/kg					
Iron	55000	820000	NA	mg/kg	24900	15500	16700	15600	20400
Lead	400	800	120	mg/kg	<u>1250</u> D	28.4	37.5	28.1	20.2
Manganese	1800	26000	220	mg/kg	<u>921</u> JKD	<u>1530</u>	<u>1110</u>	<u>589</u>	<u>1330</u>
Mercury	11	46	0.1	mg/kg	<u>113</u> JK	<u>0.597</u>	<u>2.13</u>	<u>0.353</u>	<u>5.52</u>
Nickel	1500	22000	38	mg/kg	<u>110</u>	31.4	31.9	16.6	26.6
Selenium	390	5800	0.52	mg/kg	0.272 UJ	<u>1.1</u>	<u>0.903</u> JQ	0.195 JQ	<u>0.642</u>
Silver	390	5800	560	mg/kg	1.12	0.579 U	1.15 U	0.485 U	0.618 U
Thallium	0.78	12	1	mg/kg	<u>1.46</u> UD	0.249 JQ	0.196 JQ	0.485 U	0.235 JQ
Vanadium	390	5800	2	mg/kg	<u>33.9</u>	<u>46.7</u>	<u>47</u>	<u>15.6</u>	<u>56.2</u>
Zinc	23000	350000	120	mg/kg	<u>874</u> JHD	57.6	<u>395</u>	28.9	58.4
NOTES: Bold = Exceedances of Residential Human Screening Values. <i>Bold Italic</i> = Exceedances of Industrial Human Health Screening Values. <u>Underlined</u> = Exceedances of Ecological Screening Values. *Ecological screening level for chromium used for hexavalent chromium. J = Indicates that the concentration is an estimated value. U = Indicates the analyte was analyzed for but not detected. mg/kg = Milligrams per kilogram. NA = Not available. Qualifiers based on "Result_Qualifier" field of EPA provided sample databa Human Health Screening Values from: EPA. 2018. Region 9. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. San Francisco, CA: U. S. Environmental Protection Agency, Region 9; October 2018. Ecological Screening Values are protective of most sensitive receptor from: TCEQ. 2018. TCEQ's Ecological Benchmark Tables. Soil Benchmarks. TCEQ publication RG-263b.									

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Chemical	Residential	Industrial	Ecological Screening Value	Sample ID:	C6-160412-SS-03-01	C6-160922-SS-18-01	C7-160412-SS-03-01	C7-160921-SS-18-01	C8-160921-SS-06-01
	Human	Human		Date:	4/12/2016	9/22/2016	4/12/2016	9/21/2016	9/21/2016
	Health	Health		Depth (in):	0-3	12-18	0-3	12-18	0-6
Value	Screening	Screening	Value	Units					
Aluminum	77000	1100000	NA	mg/kg	3220	19500	12000	18300	7830
Antimony	31	470	5	mg/kg	4.52 U	0.608	<u>6.26</u> U	0.562 UJL	1.09 UJL
Arsenic	0.68	3	18	mg/kg	<i>4.24</i> UJ	<i>6.11</i>	<i>5.88</i> UJ	<i>7.25</i>	<i>4.41</i> JL
Barium	15000	220000	330	mg/kg	54.7	112	90.9	107	69.3
Beryllium	160	2300	10	mg/kg	0.681 JQ	1.01	0.944 JQ	0.967	0.418 JQL
Cadmium	NA	NA	32	mg/kg	4.77 JHQ	0.536	5.53 JHQ	0.353 JQL	0.555 JQ
Chromium	120000	1800000	0.4	mg/kg	<u>228</u>	<u>23.1</u>	<u>399</u>	<u>20.5</u>	<u>46.7</u>
Chromium, Hexavalent*	0.3	6.3	0.4	mg/kg	<i>4.42</i> JQ	<i>2.54</i>	<i>269</i> U	<i>2.36</i> UJL	<i>2.23</i> U
Cobalt	23	350	13	mg/kg	4.87 JQ	9.59	7.82 JQ	9.57	5.07
Copper	3100	47000	70	mg/kg	19.2	16.2	36.5	14.6 JL	9.41
Cyanide	23	150	NA	mg/kg					
Iron	55000	820000	NA	mg/kg	22000	15500	15600	16700	8710
Lead	400	800	120	mg/kg	<u>160</u>	20.8	<u>178</u>	18.1	90.1 JL
Manganese	1800	26000	220	mg/kg	<u>563</u>	<u>1460</u>	<u>910</u>	<u>1170</u>	<u>579</u>
Mercury	11	46	0.1	mg/kg	<u>1.08</u>	<u>0.627</u>	<u>1.02</u>	0.0391	<u>0.577</u> JL
Nickel	1500	22000	38	mg/kg	14.8 JQ	24.8	31.7	23.1	19.5 JL
Selenium	390	5800	0.52	mg/kg	<u>5.04</u> UJ	<u>0.681</u>	<i>8.08</i> UJ	<u>0.681</u> JL	<u>1.13</u>
Silver	390	5800	560	mg/kg	2.32 U	0.608	3.21 U	0.562 U	1.09 U
Thallium	0.78	12	1	mg/kg	<i>5.39</i> UJ	0.216	<i>7.47</i> UJ	0.232 JQ	<i>1.09</i> U
Vanadium	390	5800	2	mg/kg	<u>14.4</u> JL	<u>41</u>	<u>31.7</u> JL	<u>46.2</u> JH	<u>24</u> JH
Zinc	23000	350000	120	mg/kg	<u>120</u>	50.8	<u>1550</u>	53.5 JH	42.9
NOTES: Bold = Exceedances of Residential Human Screening Values. <i>Bold Italic</i> = Exceedances of Industrial Human Health Screening Values. <u>Underlined</u> = Exceedances of Ecological Screening Values. *Ecological screening level for chromium used for hexavalent chromium. J = Indicates that the concentration is an estimated value. U = Indicates the analyte was analyzed for but not detected. mg/kg = Milligrams per kilogram. NA = Not available. Qualifiers based on "Result_Qualifier" field of EPA provided sample databa Human Health Screening Values from: EPA. 2018. Region 9. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. San Francisco, CA: U. S. Environmental Protection Agency, Region 9; October 2018. Ecological Screening Values are protective of most sensitive receptor from: TCEQ. 2018. TCEQ's Ecological Benchmark Tables. Soil Benchmarks. TCEQ publication RG-263b.									

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Chemical	Residential	Industrial	Ecological	Sample ID:	C8-160921-SS-18-01	C9-160921-SS-06-01	C9-160921-SS-18-01	D0-160920-SS-06-01	D0-160920-SS-06-02
	Human	Human		Date:	9/21/2016	9/21/2016	9/21/2016	9/20/2016	9/20/2016
	Health	Health		Depth (in):	12-18	0-6	12-18	0-6	0-6
	Screening	Screening		Units					
	Value	Value	Value						
Aluminum	77000	1100000	NA	mg/kg	6710	6440	2260	9110	10100
Antimony	31	470	5	mg/kg	1.06 UJL	1.07 UJL	1.01 UJL	0.527 UJL	0.528 UJL
Arsenic	0.68	3	18	mg/kg	7.29 JL	4.3 JL	2.37 JL	5.78 JL	5.48 JL
Barium	15000	220000	330	mg/kg	59.1	69.4	50.6	95.3	95.6
Beryllium	160	2300	10	mg/kg	0.352 JQL	0.386 JQL	0.144 JQL	0.764	0.738
Cadmium	NA	NA	32	mg/kg	0.359 JQ	0.373 JQ	1.01 U	0.426 JQ	0.428 JQ
Chromium	120000	1800000	0.4	mg/kg	<u>26.1</u>	<u>32.4</u>	<u>4.25</u>	<u>45.8</u>	<u>46.9</u>
Chromium, Hexavalent*	0.3	6.3	0.4	mg/kg	<u>2.19</u> U	<u>2.22</u> U	<u>2.12</u> U	<u>2.24</u> UJL	<u>2.22</u> UJL
Cobalt	23	350	13	mg/kg	4.96	4.64	2.03	7.85	7.92
Copper	3100	47000	70	mg/kg	6.52	8.15	2.43	12.1	12.2
Cyanide	23	150	NA	mg/kg					
Iron	55000	820000	NA	mg/kg	11600	9920	4850	11700	11600
Lead	400	800	120	mg/kg	25.8 JL	76.3 JL	4.7 JL	21.2	20.6
Manganese	1800	26000	220	mg/kg	<u>642</u>	<u>483</u>	213	<u>989</u>	<u>1110</u>
Mercury	11	46	0.1	mg/kg	<u>1.04</u> JL	<u>0.165</u> JL	0.00814 JL	<u>0.21</u>	<u>0.204</u>
Nickel	1500	22000	38	mg/kg	20.2 JL	13.1 JL	5.18 JL	20.9 JL	20.9 JL
Selenium	390	5800	0.52	mg/kg	<u>1.16</u>	<u>1.19</u>	<u>0.922</u> JQ	<u>1.2</u>	<u>1.16</u>
Silver	390	5800	560	mg/kg	1.06 U	1.07 U	1.01 U	0.527 U	0.528 U
Thallium	0.78	12	1	mg/kg	<u>1.06</u> U	0.159 JQ	<u>1.01</u> U	0.178 JQ	0.192 JQ
Vanadium	390	5800	2	mg/kg	<u>26.6</u> JH	<u>21.4</u> JH	<u>9.02</u> JH	<u>39.6</u> JK	<u>39.3</u> JK
Zinc	23000	350000	120	mg/kg	32.2	42.5	10.9	42.4 JL	40.3 JL
NOTES: Bold = Exceedances of Residential Human Screening Values. <i>Bold Italic</i> = Exceedances of Industrial Human Health Screening Values. <u>Underlined</u> = Exceedances of Ecological Screening Values. *Ecological screening level for chromium used for hexavalent chromium. J = Indicates that the concentration is an estimated value. U = Indicates the analyte was analyzed for but not detected. mg/kg = Milligrams per kilogram. NA = Not available. Qualifiers based on "Result_Qualifier" field of EPA provided sample databa Human Health Screening Values from: EPA. 2018. Region 9. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. San Francisco, CA: U. S. Environmental Protection Agency, Region 9; October 2018. Ecological Screening Values are protective of most sensitive receptor from: TCEQ. 2018. TCEQ’s Ecological Benchmark Tables. Soil Benchmarks. TCEQ publication RG-263b.									

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	Residential Human Health Screening Value	Industrial Human Health Screening Value	Ecological Screening Value	Sample ID: Date: Depth (in): Units	D0-160920-SS-18-01 9/20/2016 12-18 	D10-160921-SS-06-01 9/21/2016 0-6 	D10-160921-SS-06-02 9/21/2016 0-6 	D10-160921-SS-18-01 9/21/2016 12-18 	D1-160412-SS-03-01 4/12/2016 0-3
Chemical									
Aluminum	77000	1100000	NA	mg/kg	10500	7250	6890	3190	13400 JK
Antimony	31	470	5	mg/kg	0.555 UJL	1.03 UJL	1.02 UJL	1.01 UJL	0.828 UJ
Arsenic	0.68	3	18	mg/kg	<i>4.94</i> JL	<i>4.19</i>	<i>4.89</i>	<i>4.86</i>	<i>9.23</i>
Barium	15000	220000	330	mg/kg	104	62.8	61.8	39.6	90.2
Beryllium	160	2300	10	mg/kg	0.808	0.408 JQ	0.408 JQ	0.268 JQ	0.757
Cadmium	NA	NA	32	mg/kg	0.298 JQ	0.437 JQL	0.434 JQL	0.21 JQL	0.939
Chromium	120000	1800000	0.4	mg/kg	<u>21.1</u>	<u>43.6</u>	<u>42.2</u>	<u>8.56</u>	<u>151</u> JK
Chromium, Hexavalent*	0.3	6.3	0.4	mg/kg	<u>2.26</u> UJL	<u>2.19</u> UJL	<u>2.18</u> UJL	<u>2.13</u> U	<u>2.36</u> U
Cobalt	23	350	13	mg/kg	8.3	5.05	4.9	4.38	8.97
Copper	3100	47000	70	mg/kg	10.9	10.4 JL	9.55 JL	3.87 JL	16.8
Cyanide	23	150	NA	mg/kg					
Iron	55000	820000	NA	mg/kg	12600	9190	9740	10200	14100
Lead	400	800	120	mg/kg	14	42.2	39.2	5.81	48.5 D
Manganese	1800	26000	220	mg/kg	<u>981</u>	<u>574</u>	<u>570</u>	<u>435</u>	<u>1110</u> JKD
Mercury	11	46	0.1	mg/kg	0.0503	<u>0.211</u>	<u>0.219</u>	0.00829	<u>3.13</u>
Nickel	1500	22000	38	mg/kg	21.3 JL	14.5	14.1	11.7	27.8
Selenium	390	5800	0.52	mg/kg	<u>1.08</u>	0.401 JQL	<u>1.02</u> UJL	<u>1.01</u> UJL	0.262 U
Silver	390	5800	560	mg/kg	0.555 U	1.03 U	1.02 U	1.01 U	0.12 U
Thallium	0.78	12	1	mg/kg	0.187 JQ	<i>1.03</i> U	<i>1.02</i> U	<i>1.01</i> U	<i>1.4</i> UD
Vanadium	390	5800	2	mg/kg	<u>45.6</u> JK	<u>22.3</u> JH	<u>22.9</u> JH	<u>16.2</u> JH	<u>32.5</u>
Zinc	23000	350000	120	mg/kg	38 JL	46.5 JH	44.8 JH	18.7 JH	67.1
NOTES: Bold = Exceedances of Residential Human Screening Values. <i>Bold Italic</i> = Exceedances of Industrial Human Health Screening Values. <u>Underlined</u> = Exceedances of Ecological Screening Values. *Ecological screening level for chromium used for hexavalent chromium. J = Indicates that the concentration is an estimated value. U = Indicates the analyte was analyzed for but not detected. mg/kg = Milligrams per kilogram. NA = Not available. Qualifiers based on "Result_Qualifier" field of EPA provided sample databa Human Health Screening Values from: EPA. 2018. Region 9. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. San Francisco, CA: U. S. Environmental Protection Agency, Region 9; October 2018. Ecological Screening Values are protective of most sensitive receptor from: TCEQ. 2018. TCEQ’s Ecological Benchmark Tables. Soil Benchmarks. TCEQ publication RG-263b.									

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Chemical	Residential	Industrial	Ecological Screening Value	Sample ID:	D1-160920-SS-18-01	D2-160412-SS-03-01	D2-160922-SS-12-01	D2-160922-SS-18-01	D5-160922-SS-06-01
	Human	Human		Date:	9/20/2016	4/12/2016	9/22/2016	9/22/2016	9/22/2016
	Health	Health		Depth (in):	12-18	0-3	6-12	12-18	0-6
	Screening	Screening		Units					
Aluminum	77000	1100000	NA	mg/kg	8080	12400 JK	17200	17400	3210
Antimony	31	470	5	mg/kg	0.51 UJL	1.13 UJD	0.623 U	0.633 U	0.776
Arsenic	0.68	3	18	mg/kg	<i>4.41</i> JL	<i>8.17</i>	<i>7.48</i>	<i>6.86</i>	<i>11.1</i>
Barium	15000	220000	330	mg/kg	71.3	75.6	103	110	185
Beryllium	160	2300	10	mg/kg	0.634	0.613	1.07	0.925	0.426
Cadmium	NA	NA	32	mg/kg	0.233 JQL	6.68	0.759	0.47 JQ	2.16
Chromium	120000	1800000	0.4	mg/kg	<u>21.3</u> JL	<u>1970</u> JL	<u>484</u>	<u>279</u>	<u>83.1</u>
Chromium, Hexavalent*	0.3	6.3	0.4	mg/kg	<u>2.14</u> UJL	<u>302</u>	<u>2.64</u>	<u>2.59</u> UJL	<u>3.65</u>
Cobalt	23	350	13	mg/kg	5.71 JL	7.56	9.68	9.12	7.52
Copper	3100	47000	70	mg/kg	7.7 JL	<u>102</u>	18.6	15.6	12.7
Cyanide	23	150	NA	mg/kg					
Iron	55000	820000	NA	mg/kg	9370	16300	15800	15400	18900
Lead	400	800	120	mg/kg	10.8 JL	<u>287</u> D	23.9	22.5	76.5
Manganese	1800	26000	220	mg/kg	<u>646</u> JK	<u>853</u> JKD	<u>1090</u>	<u>1170</u>	<u>1400</u>
Mercury	11	46	0.1	mg/kg	<u>0.166</u>	<u>26.8</u> JK	<u>4.84</u>	<u>4.07</u>	<u>0.898</u>
Nickel	1500	22000	38	mg/kg	15 JL	<u>103</u>	27.1	25.5	24.4
Selenium	390	5800	0.52	mg/kg	<u>0.846</u> JL	0.252 UJ	<u>1.05</u>	<u>0.589</u> JQ	0.268
Silver	390	5800	560	mg/kg	0.51 U	0.18 JQ	0.623 U	0.633 U	0.511
Thallium	0.78	12	1	mg/kg	0.141 JQL	<u>1.35</u> UD	0.21 JQ	0.205 JQ	0.101
Vanadium	390	5800	2	mg/kg	<u>31.1</u> JL	<u>27.7</u>	<u>48.3</u>	<u>50.7</u>	<u>22.7</u>
Zinc	23000	350000	120	mg/kg	28.5 JL	<u>487</u> JHD	60.3	70.1	46.9
NOTES: Bold = Exceedances of Residential Human Screening Values. <i>Bold Italic</i> = Exceedances of Industrial Human Health Screening Values. <u>Underlined</u> = Exceedances of Ecological Screening Values. *Ecological screening level for chromium used for hexavalent chromium. J = Indicates that the concentration is an estimated value. U = Indicates the analyte was analyzed for but not detected. mg/kg = Milligrams per kilogram. NA = Not available. Qualifiers based on "Result_Qualifier" field of EPA provided sample databa Human Health Screening Values from: EPA. 2018. Region 9. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. San Francisco, CA: U. S. Environmental Protection Agency, Region 9; October 2018. Ecological Screening Values are protective of most sensitive receptor from: TCEQ. 2018. TCEQ’s Ecological Benchmark Tables. Soil Benchmarks. TCEQ publication RG-263b.									

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	Residential Human Health Screening Value	Industrial Human Health Screening Value	Ecological Screening Value	Sample ID: Date: Depth (in): Units	D5-160922-SS-18-01 9/22/2016 12-18	D6-160412-SS-03-01 4/12/2016 0-3	D6-160922-SS-12-01 9/22/2016 6-12	D6-160922-SS-18-01 9/22/2016 12-18	D7-160412-SS-03-01 4/12/2016 0-3
Chemical									
Aluminum	77000	1100000	NA	mg/kg	16200	8610	13500	14700	12000
Antimony	31	470	5	mg/kg	0.603	<u>7.45</u> JQ	0.586 U	0.594	<u>7.81</u> U
Arsenic	0.68	3	18	mg/kg	8.06	8.19 JLQ	7.39	5.78	7.87 JLQ
Barium	15000	220000	330	mg/kg	207	143	142	131	110
Beryllium	160	2300	10	mg/kg	1.05	0.745 JQ	1.11	0.879	0.903 JQ
Cadmium	NA	NA	32	mg/kg	0.566	17.2	0.933	0.443	<u>32.9</u>
Chromium	120000	1800000	0.4	mg/kg	<u>43.3</u>	<u>1260</u>	<u>93.9</u>	<u>52.8</u>	<u>2850</u>
Chromium, Hexavalent*	0.3	6.3	0.4	mg/kg	2.54	223 U	2.51 U	2.52	254 U
Cobalt	23	350	13	mg/kg	<u>15.1</u>	9.15 JQ	10.9	11	8 JQ
Copper	3100	47000	70	mg/kg	16.3	<u>510</u>	19.1	12	<u>206</u>
Cyanide	23	150	NA	mg/kg					
Iron	55000	820000	NA	mg/kg	17500	20000	15900	13900	16400
Lead	400	800	120	mg/kg	26.3	1810	28.2	24.2	<u>304</u>
Manganese	1800	26000	220	mg/kg	2210	<u>770</u>	<u>1370</u>	<u>1610</u>	<u>910</u>
Mercury	11	46	0.1	mg/kg	0.025	25.7	<u>0.45</u>	0.0615	13
Nickel	1500	22000	38	mg/kg	29.1	<u>143</u>	27.2	23.3	<u>99.8</u>
Selenium	390	5800	0.52	mg/kg	<u>0.576</u>	<u>5.51</u> UJ	<u>1.17</u>	0.455	<u>6.68</u> UJ
Silver	390	5800	560	mg/kg	0.603	2.53 U	0.586 U	0.594	3.07 U
Thallium	0.78	12	1	mg/kg	0.26	5.89 UJ	0.231 JQ	0.206	7.14 UJ
Vanadium	390	5800	2	mg/kg	<u>48.2</u>	<u>28.3</u> JL	<u>45.6</u>	<u>34.8</u>	<u>36.4</u> JL
Zinc	23000	350000	120	mg/kg	49.5	<u>181</u>	64.8	43.8	<u>285</u>
NOTES: Bold = Exceedances of Residential Human Screening Values. Bold Italic = Exceedances of Industrial Human Health Screening Values. <u>Underlined</u> = Exceedances of Ecological Screening Values. *Ecological screening level for chromium used for hexavalent chromium. J = Indicates that the concentration is an estimated value. U = Indicates the analyte was analyzed for but not detected. mg/kg = Milligrams per kilogram. NA = Not available. Qualifiers based on "Result_Qualifier" field of EPA provided sample databa Human Health Screening Values from: EPA. 2018. Region 9. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. San Francisco, CA: U. S. Environmental Protection Agency, Region 9; October 2018. Ecological Screening Values are protective of most sensitive receptor from: TCEQ. 2018. TCEQ’s Ecological Benchmark Tables. Soil Benchmarks. TCEQ publication RG-263b.									

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Chemical	Residential	Industrial	Ecological Screening Value	Sample ID:	D7-160921-SS-18-01	E0-160920-SS-06-01	E0-160920-SS-18-01	E10-160923-SS-06-01	E10-160923-SS-18-01
	Human	Human		Date:	9/21/2016	9/20/2016	9/20/2016	9/23/2016	9/23/2016
	Health	Health		Depth (in):	12-18	0-6	12-18	0-6	12-18
	Screening	Screening		Units					
Aluminum	77000	1100000	NA	mg/kg	14900	10500	11200	9610	9800
Antimony	31	470	5	mg/kg	0.576 UJL	1.4 UJL	1.05 UJL	0.275 UB	1.11 U
Arsenic	0.68	3	18	mg/kg	6.32	6.23 JL	5.38 JL	6.8	7.38
Barium	15000	220000	330	mg/kg	103	101	101	90.5	91.2
Beryllium	160	2300	10	mg/kg	0.942	0.739 JQ	0.705 JQ	0.622 JQ	0.538 JQ
Cadmium	NA	NA	32	mg/kg	0.441 JQL	0.438 JQ	0.282 JQ	0.788	0.288 JQ
Chromium	120000	1800000	0.4	mg/kg	<u>28.9</u>	<u>46.1</u>	<u>17.2</u>	<u>79.3</u>	<u>14.9</u>
Chromium, Hexavalent*	0.3	6.3	0.4	mg/kg	<u>2.41</u> UJL	<u>2.92</u> UJL	<u>2.22</u> UJL	<u>2.88</u> U	<u>2.21</u> U
Cobalt	23	350	13	mg/kg	8.09	8.16	7.96	7.75	7.27
Copper	3100	47000	70	mg/kg	15 JL	13	11.2	15	9.81
Cyanide	23	150	NA	mg/kg					
Iron	55000	820000	NA	mg/kg	15300	12300	12300	13200	11800
Lead	400	800	120	mg/kg	17	22.2	13	62.5	16.3
Manganese	1800	26000	220	mg/kg	<u>1020</u>	<u>1030</u>	<u>973</u>	<u>866</u>	<u>894</u>
Mercury	11	46	0.1	mg/kg	0.0608	<u>0.258</u>	0.0273	<u>0.263</u>	0.0292
Nickel	1500	22000	38	mg/kg	23.2	22.2 JL	20.7 JL	22	20.2
Selenium	390	5800	0.52	mg/kg	<u>0.662</u> JL	<u>1.01</u> JQ	<u>0.939</u> JQ	<u>0.531</u> JQ	<u>1.08</u> JQ
Silver	390	5800	560	mg/kg	0.576 U	1.4 U	1.05 U	0.241 JQ	1.11 U
Thallium	0.78	12	1	mg/kg	0.223 JQ	0.205 JQ	0.195 JQ	0.158 JQ	<u>1.11</u> U
Vanadium	390	5800	2	mg/kg	<u>41.3</u> JH	<u>42</u> JK	<u>42.5</u> JK	<u>32.6</u>	<u>37.2</u>
Zinc	23000	350000	120	mg/kg	50.9 JH	43.2 JL	37.6 JL	69.9	41.2
NOTES: Bold = Exceedances of Residential Human Screening Values. <i>Bold Italic</i> = Exceedances of Industrial Human Health Screening Values. <u>Underlined</u> = Exceedances of Ecological Screening Values. *Ecological screening level for chromium used for hexavalent chromium. J = Indicates that the concentration is an estimated value. U = Indicates the analyte was analyzed for but not detected. mg/kg = Milligrams per kilogram. NA = Not available. Qualifiers based on "Result_Qualifier" field of EPA provided sample databa Human Health Screening Values from: EPA. 2018. Region 9. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. San Francisco, CA: U. S. Environmental Protection Agency, Region 9; October 2018. Ecological Screening Values are protective of most sensitive receptor from: TCEQ. 2018. TCEQ’s Ecological Benchmark Tables. Soil Benchmarks. TCEQ publication RG-263b.									

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Chemical	Residential	Industrial	Ecological Screening Value	Sample ID:	E1-160412-SS-03-01	E1-160920-SS-18-01	E6-160922-SS-06-01	E6-160922-SS-06-02	E6-160922-SS-12-01	E6-160922-SS-18-01
	Human	Human		Date:	4/12/2016	9/20/2016	9/22/2016	9/22/2016	9/22/2016	9/22/2016
	Health	Health		Depth (in):	0-3	12-18	0-6	0-6	6-12	12-18
Screening	Value	Value	Value	Units						
Aluminum	77000	1100000	NA	mg/kg	13800 JK	12200	4960	4220	15500	14700
Antimony	31	470	5	mg/kg	<u>5.95</u> UJD	0.578 UJL	<u>16.8</u>	<u>15.3</u>	0.431 JQ	1.13
Arsenic	0.68	3	18	mg/kg	<u>9.2</u>	<u>5.45</u> JL	<u>6.12</u>	<u>5.25</u>	<u>8.89</u>	<u>6.29</u>
Barium	15000	220000	330	mg/kg	101	101	153	137	116	87.8
Beryllium	160	2300	10	mg/kg	0.817	0.775	0.277	0.301	1	0.781
Cadmium	NA	NA	32	mg/kg	6.27	0.363 JQL	<u>36.3</u>	<u>41.5</u>	4.19	0.877
Chromium	120000	1800000	0.4	mg/kg	<u>1510</u> JK	<u>36.9</u> JL	<u>3890</u>	<u>3150</u>	<u>252</u>	<u>314</u>
Chromium, Hexavalent*	0.3	6.3	0.4	mg/kg	<u>2.35</u> U	<u>2.36</u> UJL	<u>203</u>	<u>189</u>	<u>3.16</u>	<u>1.33</u>
Cobalt	23	350	13	mg/kg	9.25	7.64 JL	8.81	9.24	9.77	7.74
Copper	3100	47000	70	mg/kg	61.9	11.1 JL	<u>290</u>	<u>319</u>	25.2	14.7
Cyanide	23	150	NA	mg/kg						
Iron	55000	820000	NA	mg/kg	16100	12600	22300	26300	17000	13700
Lead	400	800	120	mg/kg	<u>154</u>	12.9 JL	<u>3740</u>	<u>2840</u>	99.9	31.3
Manganese	1800	26000	220	mg/kg	<u>1010</u> JKD	<u>983</u> JK	<u>521</u>	<u>500</u>	<u>946</u>	<u>788</u>
Mercury	11	46	0.1	mg/kg	<u>24.4</u>	<u>0.272</u>	<u>77.8</u>	<u>75.6</u>	<u>1.55</u>	<u>0.322</u>
Nickel	1500	22000	38	mg/kg	<u>84.1</u>	21.6 JL	<u>344</u>	<u>376</u>	<u>58.8</u>	29.3
Selenium	390	5800	0.52	mg/kg	0.29 U	<u>1.03</u> JL	<u>1.11</u>	<u>1.11</u>	<u>1.21</u>	<u>0.539</u>
Silver	390	5800	560	mg/kg	0.168 JQ	0.578 U	2.64	2.14	0.264 JQ	1.13
Thallium	0.78	12	1	mg/kg	0.62 UD	0.178 JQL	<u>1.11</u>	<u>1.11</u>	0.199 JQ	0.162
Vanadium	390	5800	2	mg/kg	<u>34.6</u>	<u>41.7</u> JL	<u>15.6</u>	<u>16.4</u>	<u>50.1</u>	<u>42.3</u>
Zinc	23000	350000	120	mg/kg	<u>164</u>	38.1 JL	<u>254</u>	<u>251</u>	89.9	51.5
NOTES: Bold = Exceedances of Residential Human Screening Values. <i>Bold Italic</i> = Exceedances of Industrial Human Health Screening Values. <u>Underlined</u> = Exceedances of Ecological Screening Values. *Ecological screening level for chromium used for hexavalent chromium. J = Indicates that the concentration is an estimated value. U = Indicates the analyte was analyzed for but not detected. mg/kg = Milligrams per kilogram. NA = Not available. Qualifiers based on "Result_Qualifier" field of EPA provided sample databa Human Health Screening Values from: EPA. 2018. Region 9. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. San Francisco, CA: U. S. Environmental Protection Agency, Region 9; October 2018. Ecological Screening Values are protective of most sensitive receptor from: TCEQ. 2018. TCEQ`s Ecological Benchmark Tables. Soil Benchmarks. TCEQ publication RG-263b.										

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Chemical	Residential	Industrial	Ecological Screening Value	Sample ID:	E7-160412-SS-03-01	E7-160922-SS-12-01	E7-160922-SS-18-01	E7-160922-SS-18-02	E9-160923-SS-06-01	E9-160923-SS-18-01
	Human	Human		Date:	4/12/2016	9/22/2016	9/22/2016	9/22/2016	9/23/2016	9/23/2016
	Health	Health		Depth (in):	0-3	6-12	12-18	12-18	0-6	12-18
	Screening	Screening		Units						
Aluminum	77000	1100000	NA	mg/kg	7980	14400	13000	16900	10900	16300
Antimony	31	470	5	mg/kg	<u>5.24</u> U	0.588 U	1.19	0.642	0.6 U	0.564 U
Arsenic	0.68	3	18	mg/kg	<u>4.96</u> JLQ	<u>8.35</u>	<u>6.99</u>	<u>7.13</u>	<u>6.4</u>	<u>7.13</u>
Barium	15000	220000	330	mg/kg	131	98.9	103	78.7	148	153
Beryllium	160	2300	10	mg/kg	0.677 JQ	0.885	0.768	0.846	0.711	0.865
Cadmium	NA	NA	32	mg/kg	<u>64.3</u>	1.14	0.698	3.73	0.737	0.295 JQ
Chromium	120000	1800000	0.4	mg/kg	<u>3190</u>	<u>256</u>	<u>1020</u>	<u>898</u>	<u>75.3</u>	<u>17.4</u>
Chromium, Hexavalent*	0.3	6.3	0.4	mg/kg	<u>167</u>	<u>1.88</u> JQ	<u>2.27</u>	<u>2.61</u>	<u>2.43</u> U	<u>2.43</u> U
Cobalt	23	350	13	mg/kg	10 JQ	7.88	9.57	7.07	<u>13.4</u>	11.8
Copper	3100	47000	70	mg/kg	<u>304</u>	14.3	17.2	15.6	12.8	12.7
Cyanide	23	150	NA	mg/kg						
Iron	55000	820000	NA	mg/kg	21400	14800	14200	16400	11900	15200
Lead	400	800	120	mg/kg	<u>1470</u>	27.6	57	26	89.8	<u>157</u>
Manganese	1800	26000	220	mg/kg	<u>669</u>	<u>787</u>	<u>941</u>	<u>637</u>	<u>1300</u>	<u>1400</u>
Mercury	11	46	0.1	mg/kg	<u>24.6</u>	<u>0.144</u>	<u>0.361</u>	<u>0.24</u>	<u>0.113</u>	0.0224
Nickel	1500	22000	38	mg/kg	<u>383</u>	24.8	27.9	21.5	24.3	24.5
Selenium	390	5800	0.52	mg/kg	<u>5.84</u> UJ	<u>1.24</u>	<u>0.617</u>	<u>0.76</u>	<u>0.569</u> JQ	<u>0.542</u> JQ
Silver	390	5800	560	mg/kg	2.69 U	0.588 U	1.19	0.119	0.6 U	0.564 U
Thallium	0.78	12	1	mg/kg	<u>6.25</u> UJ	0.179 JQ	0.17	0.208	0.176 JQ	0.203 JQ
Vanadium	390	5800	2	mg/kg	<u>25.7</u> JL	<u>47.7</u>	<u>42.9</u>	<u>45</u>	<u>38.9</u>	<u>44.7</u>
Zinc	23000	350000	120	mg/kg	<u>374</u>	51.8	46.7	57.3	41.6	46.5
NOTES: Bold = Exceedances of Residential Human Screening Values. Bold Italic = Exceedances of Industrial Human Health Screening Values. <u>Underlined</u> = Exceedances of Ecological Screening Values. *Ecological screening level for chromium used for hexavalent chromium. J = Indicates that the concentration is an estimated value. U = Indicates the analyte was analyzed for but not detected. mg/kg = Milligrams per kilogram. NA = Not available. Qualifiers based on "Result_Qualifier" field of EPA provided sample databa Human Health Screening Values from: EPA. 2018. Region 9. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. San Francisco, CA: U. S. Environmental Protection Agency, Region 9; October 2018. Ecological Screening Values are protective of most sensitive receptor from: TCEQ. 2018. TCEQ’s Ecological Benchmark Tables. Soil Benchmarks. TCEQ publication RG-263b.										

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Chemical	Residential	Industrial	Ecological Screening Value	Sample ID:	F0-160920-SS-06-01	F0-160920-SS-18-01	F0-160920-SS-18-02	F1-160412-SS-03-01	F1-160920-SS-12-01
	Human	Human		Date:	9/20/2016	9/20/2016	9/20/2016	4/12/2016	9/20/2016
	Health	Health		Depth (in):	0-6	12-18	12-18	0-3	6-12
Value	Value	Value	Units						
Aluminum	77000	1100000	NA	mg/kg	10700	12000	11100	11700 JK	12900
Antimony	31	470	5	mg/kg	1.09 UJL	1.05 UJL	1.1 UJL	8.39 UJD	0.579 U
Arsenic	0.68	3	18	mg/kg	6.62 JL	6.1 JL	5.54 JL	8.59	5.85
Barium	15000	220000	330	mg/kg	101	108	104	108	108
Beryllium	160	2300	10	mg/kg	0.665 JQ	0.741 JQ	0.691 JQ	0.72	0.809
Cadmium	NA	NA	32	mg/kg	0.339 JQ	0.243 JQ	0.252 JQ	8.51	0.379 JQ
Chromium	120000	1800000	0.4	mg/kg	28.7	16.9	15.4	2050 JK	26.5
Chromium, Hexavalent*	0.3	6.3	0.4	mg/kg	2.32 UJL	2.3 UJL	2.31 UJL	247	2.38 U
Cobalt	23	350	13	mg/kg	7.81	7.55	7.33	9.32	8.03
Copper	3100	47000	70	mg/kg	12.2	10.6	10.1	80	10.9
Cyanide	23	150	NA	mg/kg					
Iron	55000	820000	NA	mg/kg	12500	13300	12000	17600	12600
Lead	400	800	120	mg/kg	17.8	13.2	12.8	219	16.4
Manganese	1800	26000	220	mg/kg	1050	848	844	971 JKD	998
Mercury	11	46	0.1	mg/kg	0.151	0.0244	0.038	36.5	0.453
Nickel	1500	22000	38	mg/kg	21.2 JL	20 JL	18.7 JL	116	21.9
Selenium	390	5800	0.52	mg/kg	0.979 JQ	0.8 JQ	0.822 JQ	0.284 JQ	0.929
Silver	390	5800	560	mg/kg	1.09 U	1.05 U	1.1 U	0.386 JQ	0.579 U
Thallium	0.78	12	1	mg/kg	0.181 JQ	0.185 JQ	0.178 JQ	0.562 UD	0.186 JQ
Vanadium	390	5800	2	mg/kg	40.2 JK	42.9 JK	39.8 JK	32.3	41.7
Zinc	23000	350000	120	mg/kg	41.9 JL	36.7 JL	34.5 JL	186	38.8
<p>NOTES:</p> <p>Bold = Exceedances of Residential Human Screening Values.</p> <p><i>Bold Italic</i> = Exceedances of Industrial Human Health Screening Values.</p> <p><u>Underlined</u> = Exceedances of Ecological Screening Values.</p> <p>*Ecological screening level for chromium used for hexavalent chromium.</p> <p>J = Indicates that the concentration is an estimated value.</p> <p>U = Indicates the analyte was analyzed for but not detected.</p> <p>mg/kg = Milligrams per kilogram.</p> <p>NA = Not available.</p> <p>Qualifiers based on "Result Qualifier" field of EPA provided sample databa</p> <p>Human Health Screening Values from: EPA. 2018. Region 9. Regional</p> <p>Screening Levels (RSL) for Chemical Contaminants at Superfund Sites.</p> <p>San Francisco, CA: U. S. Environmental Protection Agency, Region 9;</p> <p>October 2018.</p> <p>Ecological Screening Values are protective of most sensitive receptor</p> <p>from: TCEQ. 2018. TCEQ’s Ecological Benchmark Tables. Soil</p> <p>Benchmarks. TCEQ publication RG-263b.</p>									

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	Residential Human Health Screening Value	Industrial Human Health Screening Value	Ecological Screening Value	Sample ID: Date: Depth (in): Units	F1-160920-SS-18-01 9/20/2016 12-18	F7-160412-SS-03-01 4/12/2016 0-3	F7-160922-SS-12-01 9/22/2016 6-12	F7-160922-SS-18-01 9/22/2016 12-18	F7-160922-SS-18-02 9/22/2016 12-18	F9-160923-SS-06-01 9/23/2016 0-6
Chemical	Value	Value	Value	Units						
Aluminum	77000	1100000	NA	mg/kg	12000	4430	13600	11200	9100	8940
Antimony	31	470	5	mg/kg	0.543 UJL	30.9 JQ	0.739	1.12	1.15	0.389 UB
Arsenic	0.68	3	18	mg/kg	4.97 JL	8.79 JLQ	8.66	6.83	6.43	5.55
Barium	15000	220000	330	mg/kg	95.1	84.2	112	97	71.7	127
Beryllium	160	2300	10	mg/kg	0.82	0.529 JQ	0.864	0.658	0.524	0.594 JQ
Cadmium	NA	NA	32	mg/kg	0.322 JQL	53.1	2.18	0.853	1.01	6.95 JK
Chromium	120000	1800000	0.4	mg/kg	28.3 JL	4660	847	451	286	196 JK
Chromium, Hexavalent*	0.3	6.3	0.4	mg/kg	2.36 UJL	421	2.76	1.75	1.17	3.4 U
Cobalt	23	350	13	mg/kg	7.35 JL	13.2	10.1	8.27	7.21	8.54
Copper	3100	47000	70	mg/kg	10.5 JL	545	20.6	14.5	15.1	25.5
Cyanide	23	150	NA	mg/kg						
Iron	55000	820000	NA	mg/kg	12200	48800	14300	12700	10900	11500
Lead	400	800	120	mg/kg	13.9 JL	5400	95.7	30.3	44.2	86.4
Manganese	1800	26000	220	mg/kg	832 JK	660	907	898	750	947
Mercury	11	46	0.1	mg/kg	2.56	32.4	4.02	0.388	0.921	0.462
Nickel	1500	22000	38	mg/kg	19.5 JL	448	701	231	1470	34
Selenium	390	5800	0.52	mg/kg	1.04 JL	5.49 UJ	1.1	0.479	1.15	0.568 JQ
Silver	390	5800	560	mg/kg	0.543 U	2.52 U	0.339 JQ	0.319	1.39	0.801 U
Thallium	0.78	12	1	mg/kg	0.161 JQL	5.87 UJ	0.172 JQ	1.12	1.15	0.171 JQ
Vanadium	390	5800	2	mg/kg	40.6 JL	17.4 JL	48.2	41.4	34.5	35.1
Zinc	23000	350000	120	mg/kg	35.5 JL	266	51.5	41.2	35.3	66.3
NOTES: Bold = Exceedances of Residential Human Screening Values. <i>Bold Italic</i> = Exceedances of Industrial Human Health Screening Values. <u>Underlined</u> = Exceedances of Ecological Screening Values. *Ecological screening level for chromium used for hexavalent chromium. J = Indicates that the concentration is an estimated value. U = Indicates the analyte was analyzed for but not detected. mg/kg = Milligrams per kilogram. NA = Not available. Qualifiers based on "Result_Qualifier" field of EPA provided sample databa Human Health Screening Values from: EPA. 2018. Region 9. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. San Francisco, CA: U. S. Environmental Protection Agency, Region 9; October 2018. Ecological Screening Values are protective of most sensitive receptor from: TCEQ. 2018. TCEQ's Ecological Benchmark Tables. Soil Benchmarks. TCEQ publication RG-263b.										

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	Residential Human Health Screening Value	Industrial Human Health Screening Value	Ecological Screening Value	Sample ID: Date: Depth (in): Units	F9-160923-SS-06-02 9/23/2016 0-6	F9-160923-SS-18-01 9/23/2016 12-18	G0-160920-SS-06-01 9/20/2016 0-6	G0-160920-SS-18-01 9/20/2016 12-18	G1-160412-SS-03-01 4/12/2016 0-3	
Chemical										
Aluminum	77000	1100000	NA	mg/kg	7420	8300	10400	9260	16300	JK
Antimony	31	470	5	mg/kg	1.3 U	1.16 U	1.31 UJL	1.06 UJL	0.285 UJ	
Arsenic	0.68	3	18	mg/kg	<i>5.41</i>	<i>4.96</i>	<i>6.32</i> JL	<i>6.19</i> JL	<i>10.2</i>	
Barium	15000	220000	330	mg/kg	194	85	101	107	115	
Beryllium	160	2300	10	mg/kg	0.477 JQ	0.552 JQ	0.744 JQ	0.725 JQ	0.977	
Cadmium	NA	NA	32	mg/kg	2.75 JK	0.639 JQ	0.444 JQ	0.286 JQ	0.86	
Chromium	120000	1800000	0.4	mg/kg	<u>116</u> JK	<u>43.6</u>	<u>40.3</u>	<u>14.7</u>	<u>112</u> JK	
Chromium, Hexavalent*	0.3	6.3	0.4	mg/kg	<u>2.84</u> U	<u>2.34</u> U	<u>2.86</u> UJL	<u>2.3</u> UJL	<u>2.48</u> U	
Cobalt	23	350	13	mg/kg	12.3	5.43	8.28	8.12	10.3	
Copper	3100	47000	70	mg/kg	17.4	9.4	14.4	10.9	28.1	
Cyanide	23	150	NA	mg/kg						
Iron	55000	820000	NA	mg/kg	9620	9440	12300	12500	16500	
Lead	400	800	120	mg/kg	66.4	25.9	23.2	13.5	37.5	
Manganese	1800	26000	220	mg/kg	<u>1530</u>	<u>589</u>	<u>1090</u>	<u>915</u>	<u>1100</u> JKD	
Mercury	11	46	0.1	mg/kg	<u>0.42</u>	<u>0.119</u>	<u>0.214</u>	0.0276	<u>1.14</u>	
Nickel	1500	22000	38	mg/kg	29.9	16.6	22 JL	20.3 JL	30.9	
Selenium	390	5800	0.52	mg/kg	<u>1.06</u> JQ	<u>1.07</u> JQ	<u>1.21</u> JQ	<u>0.964</u> JQ	0.332 JQ	
Silver	390	5800	560	mg/kg	1.3 U	1.16 U	1.31 U	1.06 U	0.146 U	
Thallium	0.78	12	1	mg/kg	0.196 JQ	<u>1.16</u> U	0.188 JQ	0.187 JQ	0.681 UD	
Vanadium	390	5800	2	mg/kg	<u>32.2</u>	<u>30.7</u>	<u>41.1</u> JK	<u>42.8</u> JK	<u>41.2</u>	
Zinc	23000	350000	120	mg/kg	51.4	35.9	46 JL	38.1 JL	77.1	
NOTES: Bold = Exceedances of Residential Human Screening Values. <i>Bold Italic</i> = Exceedances of Industrial Human Health Screening Values. <u>Underlined</u> = Exceedances of Ecological Screening Values. *Ecological screening level for chromium used for hexavalent chromium. J = Indicates that the concentration is an estimated value. U = Indicates the analyte was analyzed for but not detected. mg/kg = Milligrams per kilogram. NA = Not available. Qualifiers based on "Result_Qualifier" field of EPA provided sample databa Human Health Screening Values from: EPA. 2018. Region 9. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. San Francisco, CA: U. S. Environmental Protection Agency, Region 9; October 2018. Ecological Screening Values are protective of most sensitive receptor from: TCEQ. 2018. TCEQ’s Ecological Benchmark Tables. Soil Benchmarks. TCEQ publication RG-263b.										

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Chemical	Residential	Industrial	Ecological Screening Value	Sample ID:	G1-160920-SS-18-01	G5-160412-SS-03-01	G5-160922-SS-12-01	G5-160922-SS-18-01	G6-160923-SS-18-01
	Human	Human		Date:	9/20/2016	4/12/2016	9/22/2016	9/22/2016	9/23/2016
	Health	Health		Depth (in):	12-18	0-3	6-12	12-18	12-18
Value	Screening	Screening	Value	Units					
Aluminum	77000	1100000	NA	mg/kg	11900	7190	7420	9910	8540
Antimony	31	470	5	mg/kg	0.544 UJL	<u>7.48</u> JQ	<u>7.14</u>	0.675 JQ	1.06 U
Arsenic	0.68	3	18	mg/kg	5.59 JL	6.81 JLQ	7.41	7.55	7.29
Barium	15000	220000	330	mg/kg	98.3	101	111	89.9	76.1
Beryllium	160	2300	10	mg/kg	0.85	0.67 JQ	0.548 JQ	0.679 JQ	0.553 JQ
Cadmium	NA	NA	32	mg/kg	0.252 JQL	<u>86.5</u>	27.3	3.16	9.62
Chromium	120000	1800000	0.4	mg/kg	<u>17.6</u> JL	<u>4690</u>	<u>3560</u>	<u>565</u>	<u>371</u>
Chromium, Hexavalent*	0.3	6.3	0.4	mg/kg	2.38 UJL	274	14.5	2.34 UJL	2.31 U
Cobalt	23	350	13	mg/kg	7.47 JL	11.8	9.63	8.16	6.41
Copper	3100	47000	70	mg/kg	10.4 JL	<u>484</u>	<u>147</u>	22.2	13.7
Cyanide	23	150	NA	mg/kg					
Iron	55000	820000	NA	mg/kg	13100	23700	17200	13200	11500
Lead	400	800	120	mg/kg	12.8 JL	1950	2890	<u>174</u>	21.5
Manganese	1800	26000	220	mg/kg	<u>811</u> JK	<u>726</u>	<u>770</u>	<u>830</u>	<u>771</u>
Mercury	11	46	0.1	mg/kg	<u>0.273</u>	41.7	<u>1.01</u>	<u>1.61</u>	<u>2.94</u>
Nickel	1500	22000	38	mg/kg	18.7 JL	<u>1040</u>	<u>573</u>	<u>79</u>	<u>40.9</u>
Selenium	390	5800	0.52	mg/kg	<u>1.01</u> JL	<u>5.78</u> UJ	<u>1.08</u>	<u>1.03</u> JQ	<u>0.957</u> JQ
Silver	390	5800	560	mg/kg	0.544 U	2.79 JQ	0.95	1.11 U	1.06 U
Thallium	0.78	12	1	mg/kg	0.173 JQL	6.18 UJ	0.11 JQ	1.11 U	1.06 U
Vanadium	390	5800	2	mg/kg	<u>42.6</u> JL	<u>26.9</u> JL	<u>33.7</u>	<u>40.8</u>	<u>36.8</u>
Zinc	23000	350000	120	mg/kg	35.9 JL	<u>771</u>	<u>297</u>	65.4	91.9
NOTES: Bold = Exceedances of Residential Human Screening Values. Bold Italic = Exceedances of Industrial Human Health Screening Values. <u>Underlined</u> = Exceedances of Ecological Screening Values. *Ecological screening level for chromium used for hexavalent chromium. J = Indicates that the concentration is an estimated value. U = Indicates the analyte was analyzed for but not detected. mg/kg = Milligrams per kilogram. NA = Not available. Qualifiers based on "Result Qualifier" field of EPA provided sample databa Human Health Screening Values from: EPA. 2018. Region 9. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. San Francisco, CA: U. S. Environmental Protection Agency, Region 9; October 2018. Ecological Screening Values are protective of most sensitive receptor from: TCEQ. 2018. TCEQ’s Ecological Benchmark Tables. Soil Benchmarks. TCEQ publication RG-263b.									

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	Residential Human Health Screening Value	Industrial Human Health Screening Value	Ecological Screening Value	Sample ID: Date: Depth (in): Units	G7-160412-SS-03-01 4/12/2016 0-3	G7-160923-SS-12-01 9/23/2016 6-12	G7-160923-SS-18-01 9/23/2016 12-18	H0-160920-SS-06-01 9/20/2016 0-6	H0-160920-SS-18-01 9/20/2016 12-18
Chemical									
Aluminum	77000	1100000	NA	mg/kg	6220	12200	8550	8140	11600
Antimony	31	470	5	mg/kg	<u>14.1</u> JQ	0.292 JQ	1.09 U	0.551 UJL	0.539 UJL
Arsenic	0.68	3	18	mg/kg	<i>6.18</i> JLQ	<i>7.76</i>	<i>6.92</i>	<i>4.7</i> JL	<i>7.2</i> JL
Barium	15000	220000	330	mg/kg	172	89.5	85	72.6	156
Beryllium	160	2300	10	mg/kg	0.485 JQ	0.679	0.528 JQ	0.689	1.05
Cadmium	NA	NA	32	mg/kg	<u>52.5</u>	3.71	2.07	0.331 JQL	0.376 JQL
Chromium	120000	1800000	0.4	mg/kg	<u>4080</u>	<u>539</u>	<u>332</u>	<u>26.5</u> JL	<u>17.8</u> JL
Chromium, Hexavalent*	0.3	6.3	0.4	mg/kg	<i>5620</i>	<i>2.75</i>	<i>1.34</i> JQ	<i>2.32</i> UJL	<i>2.33</i> UJL
Cobalt	23	350	13	mg/kg	11.3 JQ	6.85	7.1	6.06 JL	10.7 JL
Copper	3100	47000	70	mg/kg	<u>384</u>	13.8	11.3	10.5 JL	12.6 JL
Cyanide	23	150	NA	mg/kg					
Iron	55000	820000	NA	mg/kg	23300	11900	11100	9440	14600
Lead	400	800	120	mg/kg	<i>4660</i>	32.8	28.8	16.3 JL	16.8 JL
Manganese	1800	26000	220	mg/kg	<u>1160</u>	<u>862</u>	<u>932</u>	<u>850</u> JK	<u>1540</u> JK
Mercury	11	46	0.1	mg/kg	<i>36.4</i>	<u>3.74</u>	<u>1.89</u>	<u>0.23</u>	0.0221
Nickel	1500	22000	38	mg/kg	<u>657</u>	29.5	25.5	16.3 JL	28.5 JL
Selenium	390	5800	0.52	mg/kg	<u>6.6</u> UJ	<u>1.12</u>	<u>1.02</u> JQ	<u>0.941</u> JL	<u>1.1</u> JL
Silver	390	5800	560	mg/kg	3.03 JQ	0.667 U	1.09 U	0.551 U	0.539 U
Thallium	0.78	12	1	mg/kg	<i>6.72</i> UJ	0.143 JQ	<i>1.09</i> U	0.125 JQL	0.28 JQL
Vanadium	390	5800	2	mg/kg	<u>24.2</u> JL	<u>39.6</u>	<u>36.9</u>	<u>31.6</u> JL	<u>49.8</u> JL
Zinc	23000	350000	120	mg/kg	<u>491</u>	53.9	43.3	35.9 JL	42.6 JL
NOTES: Bold = Exceedances of Residential Human Screening Values. Bold Italic = Exceedances of Industrial Human Health Screening Values. <u>Underlined</u> = Exceedances of Ecological Screening Values. *Ecological screening level for chromium used for hexavalent chromium. J = Indicates that the concentration is an estimated value. U = Indicates the analyte was analyzed for but not detected. mg/kg = Milligrams per kilogram. NA = Not available. Qualifiers based on "Result_Qualifier" field of EPA provided sample databa Human Health Screening Values from: EPA. 2018. Region 9. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. San Francisco, CA: U. S. Environmental Protection Agency, Region 9; October 2018. Ecological Screening Values are protective of most sensitive receptor from: TCEQ. 2018. TCEQ’s Ecological Benchmark Tables. Soil Benchmarks. TCEQ publication RG-263b.									

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	Residential Human Health Screening Value	Industrial Human Health Screening Value	Ecological Screening Value	Sample ID: Date: Depth (in): Units	H1-160412-SS-03-01 4/12/2016 0-3	H1-160920-SS-18-01 9/20/2016 12-18	H2-160412-SS-03-01 4/12/2016 0-3	H2-160920-SS-18-01 9/20/2016 12-18	H3-160412-SS-03-01 4/12/2016 0-3
Chemical									
Aluminum	77000	1100000	NA	mg/kg	14700 JK	9060	12200 JK	12100	11300 JK
Antimony	31	470	5	mg/kg	0.763 UJ	0.557 UJL	1.18 UJ	1.13 UJL	2.31 UJ
Arsenic	0.68	3	18	mg/kg	9.96	5.48 JL	8.77	7.81	8.77
Barium	15000	220000	330	mg/kg	111	82.6	99.9	103	92.7
Beryllium	160	2300	10	mg/kg	0.892	0.728	0.767	0.715 JQ	0.718
Cadmium	NA	NA	32	mg/kg	0.716	0.246 JQL	2.26	0.313 JQ	4.12
Chromium	120000	1800000	0.4	mg/kg	<u>80.6</u> JK	<u>16.3</u> JL	<u>293</u> JK	<u>88.2</u> JH	<u>631</u> JK
Chromium, Hexavalent*	0.3	6.3	0.4	mg/kg	<u>2.43</u> U	<u>2.37</u> UJL	<u>2.36</u> U	<u>2.31</u> UJL	<u>238</u> U
Cobalt	23	350	13	mg/kg	10.2	6.89 JL	9.14	9.05	8.48
Copper	3100	47000	70	mg/kg	18.2	9.94 JL	23.8	13.9 JK	32.3
Cyanide	23	150	NA	mg/kg					
Iron	55000	820000	NA	mg/kg	15200	11000	13400	14000	14800
Lead	400	800	120	mg/kg	34.4	13 JL	72.6	17.2	93.7
Manganese	1800	26000	220	mg/kg	<u>1080</u> JKD	<u>798</u> JK	<u>935</u> JKD	<u>1060</u>	<u>856</u> JKD
Mercury	11	46	0.1	mg/kg	<u>1.17</u>	0.0332	<u>1.95</u>	0.0765	<u>6.52</u>
Nickel	1500	22000	38	mg/kg	27.4	16.6 JL	34.9	21.3	<u>41.5</u>
Selenium	390	5800	0.52	mg/kg	0.304 U	<u>0.997</u> JL	0.301 U	<u>1.03</u> UB	0.4 JQ
Silver	390	5800	560	mg/kg	0.14 U	0.557 U	0.138 U	1.13 U	0.138 U
Thallium	0.78	12	1	mg/kg	0.65 UD	0.146 JQL	0.644 UD	0.231 JQ	0.642 UD
Vanadium	390	5800	2	mg/kg	<u>39.2</u>	<u>36.9</u> JL	<u>34.3</u>	<u>45.3</u> JH	<u>32.8</u>
Zinc	23000	350000	120	mg/kg	70.4	33.4 JL	78.8	41.5 JH	97.1
NOTES: Bold = Exceedances of Residential Human Screening Values. <i>Bold Italic</i> = Exceedances of Industrial Human Health Screening Values. <u>Underlined</u> = Exceedances of Ecological Screening Values. *Ecological screening level for chromium used for hexavalent chromium. J = Indicates that the concentration is an estimated value. U = Indicates the analyte was analyzed for but not detected. mg/kg = Milligrams per kilogram. NA = Not available. Qualifiers based on "Result_Qualifier" field of EPA provided sample databa Human Health Screening Values from: EPA. 2018. Region 9. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. San Francisco, CA: U. S. Environmental Protection Agency, Region 9; October 2018. Ecological Screening Values are protective of most sensitive receptor from: TCEQ. 2018. TCEQ’s Ecological Benchmark Tables. Soil Benchmarks. TCEQ publication RG-263b.									

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Chemical	Residential	Industrial	Ecological Screening Value	Sample ID:	H3-160920-SS-18-01	H4-160412-SS-03-01	H4-160921-SS-18-01	H5-160412-SS-03-01	H5-160921-SS-18-01
	Human	Human		Date:	9/20/2016	4/12/2016	9/21/2016	4/12/2016	9/21/2016
	Health	Health		Depth (in):	12-18	0-3	12-18	0-3	12-18
	Screening	Screening		Units					
Aluminum	77000	1100000	NA	mg/kg	9910	9150 JK	8130	11500 JK	9970
Antimony	31	470	5	mg/kg	1.1 UJL	1.83 JQL	0.816 JQL	2.8 UJ	1.08 UJL
Arsenic	0.68	3	18	mg/kg	7.09	7.73	7.93	8.75	8.16
Barium	15000	220000	330	mg/kg	90	100	92.5	105	98.5
Beryllium	160	2300	10	mg/kg	0.651 JQ	0.634	0.616 JQ	0.737	0.652 JQ
Cadmium	NA	NA	32	mg/kg	0.442 JQ	<u>32.4</u>	5.33	16	0.358 JQ
Chromium	120000	1800000	0.4	mg/kg	<u>133</u> JH	<u>1780</u> JK	<u>301</u> JH	<u>1290</u> JK	<u>35.7</u> JH
Chromium, Hexavalent*	0.3	6.3	0.4	mg/kg	<u>2.28</u> UJL	<u>242</u> U	<u>9.69</u> JL	<u>273</u> U	<u>2.31</u> UJL
Cobalt	23	350	13	mg/kg	7.02	10.9	8.1	9.46	9.25
Copper	3100	47000	70	mg/kg	10.8 JK	<u>166</u>	55.2 JK	<u>94.6</u>	10.8 JK
Cyanide	23	150	NA	mg/kg					
Iron	55000	820000	NA	mg/kg	12100	21200	15500	16400	12800
Lead	400	800	120	mg/kg	17.5	<u>797</u>	<u>172</u>	<u>325</u>	19.4
Manganese	1800	26000	220	mg/kg	<u>823</u>	<u>752</u> JKD	<u>774</u>	<u>814</u> JKD	<u>1000</u>
Mercury	11	46	0.1	mg/kg	<u>0.309</u>	<u>25.7</u>	<u>4.64</u>	<u>44.2</u>	<u>0.981</u>
Nickel	1500	22000	38	mg/kg	18.9	<u>282</u>	<u>133</u>	<u>176</u>	21
Selenium	390	5800	0.52	mg/kg	<u>0.962</u> UB	0.304 U	<u>1.02</u> UB	0.324 U	<u>0.949</u> UB
Silver	390	5800	560	mg/kg	1.1 U	0.71	0.224 JQ	0.281 JQ	1.08 U
Thallium	0.78	12	1	mg/kg	0.159 JQ	0.65 UD	<u>1.12</u> U	0.692 UD	<u>1.08</u> U
Vanadium	390	5800	2	mg/kg	<u>39.4</u> JH	<u>28.5</u>	<u>39.2</u> JH	<u>33.5</u>	<u>42.6</u> JH
Zinc	23000	350000	120	mg/kg	37.3 JH	<u>304</u>	79.9 JH	<u>340</u>	38 JH
NOTES: Bold = Exceedances of Residential Human Screening Values. Bold Italic = Exceedances of Industrial Human Health Screening Values. <u>Underlined</u> = Exceedances of Ecological Screening Values. *Ecological screening level for chromium used for hexavalent chromium. J = Indicates that the concentration is an estimated value. U = Indicates the analyte was analyzed for but not detected. mg/kg = Milligrams per kilogram. NA = Not available. Qualifiers based on "Result_Qualifier" field of EPA provided sample databa Human Health Screening Values from: EPA. 2018. Region 9. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. San Francisco, CA: U. S. Environmental Protection Agency, Region 9; October 2018. Ecological Screening Values are protective of most sensitive receptor from: TCEQ. 2018. TCEQ’s Ecological Benchmark Tables. Soil Benchmarks. TCEQ publication RG-263b.									

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Chemical	Residential	Industrial	Ecological Screening Value	Sample ID:	I0-160920-SS-06-01	I0-160920-SS-18-01	I10-160921-SS-06-01	I10-160921-SS-12-01	I10-160921-SS-18-01
	Human	Human		Date:	9/20/2016	9/20/2016	9/21/2016	9/21/2016	9/21/2016
	Health	Health		Depth (in):	0-6	12-18	0-6	6-12	12-18
Value	Value	Value	Units						
Aluminum	77000	1100000	NA	mg/kg	9570	10400	9430	11300	11800
Antimony	31	470	5	mg/kg	0.559 UJL	0.558 UJL	3.34 JL	0.279 JQ	1.08 UJL
Arsenic	0.68	3	18	mg/kg	6.38 JL	6.8 JL	6.9	8.6	6.51
Barium	15000	220000	330	mg/kg	97.3	86.4	109	110	121
Beryllium	160	2300	10	mg/kg	0.815	0.782	0.616 JQ	0.725	0.61 JQ
Cadmium	NA	NA	32	mg/kg	0.379 JQL	0.244 JQL	30.5 JL	0.922	0.324 JQL
Chromium	120000	1800000	0.4	mg/kg	<u>33.5</u> JL	<u>15.6</u> JL	<u>5170</u>	<u>552</u>	<u>57</u> JK
Chromium, Hexavalent*	0.3	6.3	0.4	mg/kg	<u>2.32</u> UJL	<u>2.29</u> UJL	<u>5.89</u> JL	<u>1.51</u> JQ	<u>2.35</u> UJL
Cobalt	23	350	13	mg/kg	7.9 JL	7.51 JL	7.09	8.37	7.35
Copper	3100	47000	70	mg/kg	12.1 JL	10.1 JL	<u>173</u> JL	12.7	9.48 JL
Cyanide	23	150	NA	mg/kg					
Iron	55000	820000	NA	mg/kg	11500	11900	13200	12700	11300
Lead	400	800	120	mg/kg	22.4 JL	14 JL	<u>339</u>	20	13.9
Manganese	1800	26000	220	mg/kg	<u>1030</u> JK	<u>989</u> JK	<u>617</u>	<u>1130</u>	<u>1360</u>
Mercury	11	46	0.1	mg/kg	<u>0.182</u>	0.0423	46.2	<u>2.44</u>	<u>0.432</u>
Nickel	1500	22000	38	mg/kg	19 JL	17.9 JL	<u>230</u>	26.2	20.5
Selenium	390	5800	0.52	mg/kg	<u>1.19</u> JL	<u>1.01</u> JL	<u>0.555</u> JQL	<u>1.06</u>	0.429 JQL
Silver	390	5800	560	mg/kg	0.559 U	0.558 U	0.823 JQ	0.578 U	1.08 U
Thallium	0.78	12	1	mg/kg	0.144 JQL	0.126 JQL	<u>1.13</u> U	0.154 JQ	<u>1.08</u> U
Vanadium	390	5800	2	mg/kg	<u>39.3</u> JL	<u>39.5</u> JL	<u>34.6</u> JH	<u>43.4</u>	<u>35.3</u> JH
Zinc	23000	350000	120	mg/kg	46.8 JL	36.8 JL	<u>390</u> JH	62.1	35.1 JH
NOTES: Bold = Exceedances of Residential Human Screening Values. Bold Italic = Exceedances of Industrial Human Health Screening Values. <u>Underlined</u> = Exceedances of Ecological Screening Values. *Ecological screening level for chromium used for hexavalent chromium. J = Indicates that the concentration is an estimated value. U = Indicates the analyte was analyzed for but not detected. mg/kg = Milligrams per kilogram. NA = Not available. Qualifiers based on "Result_Qualifier" field of EPA provided sample databa Human Health Screening Values from: EPA. 2018. Region 9. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. San Francisco, CA: U. S. Environmental Protection Agency, Region 9; October 2018. Ecological Screening Values are protective of most sensitive receptor from: TCEQ. 2018. TCEQ’s Ecological Benchmark Tables. Soil Benchmarks. TCEQ publication RG-263b.									

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	Residential Human Health Screening Value	Industrial Human Health Screening Value	Ecological Screening Value	Sample ID: Date: Depth (in): Units	I10-160921-SS-18-02 9/21/2016 12-18	I1-160920-SS-06-01 9/20/2016 0-6	I1-160920-SS-06-02 9/20/2016 0-6	I1-160920-SS-18-01 9/20/2016 12-18	I2-160921-SS-06-01 9/20/2016 0-6
Chemical									
Aluminum	77000	1100000	NA	mg/kg	10900	8450	9920	6390	10300
Antimony	31	470	5	mg/kg	1.08 UJL	0.555 UJL	1.05 UJL	0.528 UJL	1.11 UJL
Arsenic	0.68	3	18	mg/kg	6.25	5.42 JL	5.58 JL	4.75 JL	6.44
Barium	15000	220000	330	mg/kg	93.7	80.7	88.8	63.9	93.8
Beryllium	160	2300	10	mg/kg	0.565 JQ	0.633	0.634 JQ	0.477 JQ	0.645 JQ
Cadmium	NA	NA	32	mg/kg	0.45 JQL	0.475 JQL	0.412 JQL	0.161 JQL	0.43 JQ
Chromium	120000	1800000	0.4	mg/kg	<u>261</u> JK	<u>36.1</u> JL	<u>33.3</u> JL	<u>10</u> JL	<u>39.7</u> JH
Chromium, Hexavalent*	0.3	6.3	0.4	mg/kg	<u>2.33</u> UJL	<u>2.27</u> UJL	<u>2.28</u> UJL	<u>2.3</u> UJL	<u>2.27</u> UJL
Cobalt	23	350	13	mg/kg	6.36	6.91 JL	7.52 JL	5.51 JL	8.16
Copper	3100	47000	70	mg/kg	10.4 JL	10.4 JL	11.2 JL	6.94 JL	12.4 JK
Cyanide	23	150	NA	mg/kg					
Iron	55000	820000	NA	mg/kg	10500	10000	10300	8240	11700
Lead	400	800	120	mg/kg	15	20.1 JL	22 JL	10.2 JL	23.8
Manganese	1800	26000	220	mg/kg	<u>1020</u>	<u>827</u> JK	<u>998</u> JK	<u>645</u> JK	<u>953</u>
Mercury	11	46	0.1	mg/kg	<u>0.511</u>	<u>0.277</u>	<u>0.266</u>	0.0271	<u>0.237</u>
Nickel	1500	22000	38	mg/kg	17.6	16.6 JL	17.8 JL	12.3 JL	19.7
Selenium	390	5800	0.52	mg/kg	<u>1.08</u> UJL	<u>1.05</u> JL	<u>0.767</u> JQL	<u>0.7</u> JL	<u>1.13</u> UB
Silver	390	5800	560	mg/kg	1.08 U	0.555 U	1.05 U	0.528 U	1.11 U
Thallium	0.78	12	1	mg/kg	<u>1.08</u> U	0.128 JQL	0.149 JQL	0.104 JQL	<u>1.11</u> U
Vanadium	390	5800	2	mg/kg	<u>32.7</u> JH	<u>34.8</u> JL	<u>36.7</u> JL	<u>28.7</u> JL	<u>39.6</u> JH
Zinc	23000	350000	120	mg/kg	34.2 JH	41.1 JL	42.4 JL	23.7 JL	47.4 JH
NOTES: Bold = Exceedances of Residential Human Screening Values. <i>Bold Italic</i> = Exceedances of Industrial Human Health Screening Values. <u>Underlined</u> = Exceedances of Ecological Screening Values. *Ecological screening level for chromium used for hexavalent chromium. J = Indicates that the concentration is an estimated value. U = Indicates the analyte was analyzed for but not detected. mg/kg = Milligrams per kilogram. NA = Not available. Qualifiers based on "Result_Qualifier" field of EPA provided sample databa Human Health Screening Values from: EPA. 2018. Region 9. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. San Francisco, CA: U. S. Environmental Protection Agency, Region 9; October 2018. Ecological Screening Values are protective of most sensitive receptor from: TCEQ. 2018. TCEQ's Ecological Benchmark Tables. Soil Benchmarks. TCEQ publication RG-263b.									

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Chemical	Residential Human Health Screening Value	Industrial Human Health Screening Value	Ecological Screening Value	Sample ID: Date: Depth (in): Units	I2-160921-SS-18-01 9/20/2016 12-18	I3-160921-SS-06-01 9/21/2016 0-6	I3-160921-SS-18-01 9/21/2016 12-18	I4-160921-SS-06-01 9/21/2016 0-6	I4-160921-SS-18-01 9/21/2016 12-18
	Value	Value	Value						
Aluminum	77000	1100000	NA	mg/kg	8990	9680	8850	10100	9390
Antimony	31	470	5	mg/kg	1.1 UJL	1.11 UJL	1.08 UJL	1.11 UJL	1.05 UJL
Arsenic	0.68	3	18	mg/kg	6.86	6.97	7.42	6.91	6.85
Barium	15000	220000	330	mg/kg	95.4	93.1	98.6	85.7	83.5
Beryllium	160	2300	10	mg/kg	0.629 JQ	0.67 JQ	0.654 JQ	0.627 JQ	0.611 JQ
Cadmium	NA	NA	32	mg/kg	0.24 JQ	0.467 JQ	0.257 JQ	0.444 JQ	0.241 JQ
Chromium	120000	1800000	0.4	mg/kg	<u>14.9</u> JH	<u>44.8</u> JH	<u>14.4</u> JH	<u>40.2</u> JH	<u>16.5</u> JH
Chromium, Hexavalent*	0.3	6.3	0.4	mg/kg	<u>2.31</u> UJL	<u>2.33</u> UJL	<u>2.29</u> UJL	<u>2.32</u> UJL	<u>2.26</u> UJL
Cobalt	23	350	13	mg/kg	8.06	8.02	7.89	7.32	6.93
Copper	3100	47000	70	mg/kg	10.1 JK	13.3 JK	9.97 JK	12 JK	9.32 JK
Cyanide	23	150	NA	mg/kg					
Iron	55000	820000	NA	mg/kg	11800	12000	12000	11300	11100
Lead	400	800	120	mg/kg	15.3	25.9	15.7	24.2	15
Manganese	1800	26000	220	mg/kg	<u>869</u>	<u>866</u>	<u>896</u>	<u>869</u>	<u>884</u>
Mercury	11	46	0.1	mg/kg	0.0594	<u>0.335</u>	0.0765	<u>0.324</u>	0.0843
Nickel	1500	22000	38	mg/kg	18.3	20.6	18.6	19.1	16.7
Selenium	390	5800	0.52	mg/kg	<u>1.05</u> UB	<u>1.24</u> UB	<u>1.07</u> UB	<u>1.19</u> UB	<u>1.08</u> UB
Silver	390	5800	560	mg/kg	1.1 U	1.11 U	1.08 U	1.11 U	1.05 U
Thallium	0.78	12	1	mg/kg	<u>1.1</u> U	<u>1.11</u> U	<u>1.08</u> U	<u>1.11</u> U	<u>1.05</u> U
Vanadium	390	5800	2	mg/kg	<u>40.2</u> JH	<u>40.8</u> JH	<u>40</u> JH	<u>37</u> JH	<u>36.6</u> JH
Zinc	23000	350000	120	mg/kg	35.6 JH	53.1 JH	36.4 JH	48.4 JH	34.2 JH
NOTES: Bold = Exceedances of Residential Human Screening Values. <i>Bold Italic</i> = Exceedances of Industrial Human Health Screening Values. <u>Underlined</u> = Exceedances of Ecological Screening Values. *Ecological screening level for chromium used for hexavalent chromium. J = Indicates that the concentration is an estimated value. U = Indicates the analyte was analyzed for but not detected. mg/kg = Milligrams per kilogram. NA = Not available. Qualifiers based on "Result Qualifier" field of EPA provided sample databa Human Health Screening Values from: EPA. 2018. Region 9. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. San Francisco, CA: U. S. Environmental Protection Agency, Region 9; October 2018. Ecological Screening Values are protective of most sensitive receptor from: TCEQ. 2018. TCEQ’s Ecological Benchmark Tables. Soil Benchmarks. TCEQ publication RG-263b.									

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Chemical	Residential	Industrial	Ecological Screening Value	Sample ID:	I5-160921-SS-06-01	I5-160921-SS-06-02	I5-160921-SS-18-01	I6-160921-SS-06-01	I6-160921-SS-18-01
	Human	Human		Date:	9/21/2016	9/21/2016	9/21/2016	9/21/2016	9/21/2016
	Health	Health		Depth (in):	0-6	0-6	12-18	0-6	12-18
Value	Screening	Screening	Value	Units					
Aluminum	77000	1100000	NA	mg/kg	9850	10300	9470	10600	11100
Antimony	31	470	5	mg/kg	1.1 UJL	1.14 U	1.08 UJL	1.15 UJL	1.12 UJL
Arsenic	0.68	3	18	mg/kg	<i>6.86</i>	<i>7.01</i>	<i>7.76</i>	<i>6.89</i>	<i>6.67</i>
Barium	15000	220000	330	mg/kg	92.9	93.6	84.9	89.6	78.2
Beryllium	160	2300	10	mg/kg	0.688 JQ	0.712 JQ	0.611 JQ	0.633 JQ	0.554 JQ
Cadmium	NA	NA	32	mg/kg	0.512 JQ	0.526 JQ	0.234 JQ	0.65 JQL	0.199 JQL
Chromium	120000	1800000	0.4	mg/kg	<u>40.1</u> JH	<u>45.4</u> JJH	<u>13.4</u> JH	<u>54.4</u>	<u>13.4</u>
Chromium, Hexavalent*	0.3	6.3	0.4	mg/kg	<u>2.32</u> UJL	<u>2.32</u> UJL	<u>2.28</u> UJL	<u>2.41</u> UJL	<u>2.33</u> UJL
Cobalt	23	350	13	mg/kg	7.42	7.42	7.26	7.06	6.26
Copper	3100	47000	70	mg/kg	13.3 JK	13.5 JK	9.55 JK	14.5 JL	8.45 JL
Cyanide	23	150	NA	mg/kg					
Iron	55000	820000	NA	mg/kg	11700	11900	11900	11500	11000
Lead	400	800	120	mg/kg	27.4	28.7	14.7	30.5	11.9
Manganese	1800	26000	220	mg/kg	<u>841</u>	<u>846</u>	<u>911</u>	<u>799</u>	<u>895</u>
Mercury	11	46	0.1	mg/kg	<u>0.379</u>	<u>0.343</u> UJL	0.0396	<u>0.574</u>	0.02
Nickel	1500	22000	38	mg/kg	19.8	19.7	17.4	20.5	15.7
Selenium	390	5800	0.52	mg/kg	<u>1.26</u> UB	<u>1.28</u> UB	<u>0.981</u> UB	<u>0.628</u> JQL	<u>1.12</u> UJL
Silver	390	5800	560	mg/kg	1.1 U	1.14 U	1.08 U	1.15 U	1.12 U
Thallium	0.78	12	1	mg/kg	<u>1.1</u> U	<u>1.14</u> U	<u>1.08</u> U	<u>1.15</u> U	<u>1.12</u> U
Vanadium	390	5800	2	mg/kg	<u>39</u> JH	<u>39</u> JH	<u>38.1</u> JH	<u>36.7</u> JH	<u>35.4</u> JH
Zinc	23000	350000	120	mg/kg	52.5 JH	54.1 JH	34 JH	59 JH	31.1 JH
NOTES: Bold = Exceedances of Residential Human Screening Values. <i>Bold Italic</i> = Exceedances of Industrial Human Health Screening Values. <u>Underlined</u> = Exceedances of Ecological Screening Values. *Ecological screening level for chromium used for hexavalent chromium. J = Indicates that the concentration is an estimated value. U = Indicates the analyte was analyzed for but not detected. mg/kg = Milligrams per kilogram. NA = Not available. Qualifiers based on "Result Qualifier" field of EPA provided sample databa Human Health Screening Values from: EPA. 2018. Region 9. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. San Francisco, CA: U. S. Environmental Protection Agency, Region 9; October 2018. Ecological Screening Values are protective of most sensitive receptor from: TCEQ. 2018. TCEQ’s Ecological Benchmark Tables. Soil Benchmarks. TCEQ publication RG-263b.									

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Chemical	Residential	Industrial	Ecological Screening Value	Sample ID:	J0-160920-SS-06-01	J0-160920-SS-18-01	J10-160921-SS-06-01	J10-160921-SS-18-01	J10-160921-SS-18-02
	Human	Human		Date:	9/20/2016	9/20/2016	9/21/2016	9/21/2016	9/21/2016
	Health	Health		Depth (in):	0-6	12-18	0-6	12-18	12-18
	Screening	Screening		Units					
Aluminum	77000	1100000	NA	mg/kg	8640	8600	8190	13000	10400
Antimony	31	470	5	mg/kg	1.08 UJL	1.08 UJL	1.15 UJL	1.12 UJL	1.14 UJL
Arsenic	0.68	3	18	mg/kg	<i>6.53</i> JL	<i>6.6</i> JL	<i>4.48</i>	<i>6.09</i>	<i>6.26</i>
Barium	15000	220000	330	mg/kg	210	83.5	63.7	73.9	69.8
Beryllium	160	2300	10	mg/kg	0.649 JQ	0.561 JQ	0.438 JQ	0.646 JQ	0.584 JQ
Cadmium	NA	NA	32	mg/kg	0.41 JQL	0.22 JQL	1.05 JQL	0.211 JQL	0.199 JQL
Chromium	120000	1800000	0.4	mg/kg	<u>24.6</u> JL	<u>12.3</u> JL	<u>183</u>	<u>18.1</u>	<u>13.9</u>
Chromium, Hexavalent*	0.3	6.3	0.4	mg/kg	<u>2.27</u> UJL	<u>2.27</u> UJL	<i>0.964</i> JQL	<i>2.41</i> UJL	<i>2.35</i> UJL
Cobalt	23	350	13	mg/kg	10.1 JL	7.3 JL	4.67	5.68	6.66
Copper	3100	47000	70	mg/kg	12.2 JL	9.19 JL	17.4 JL	10.1 JL	9.7 JL
Cyanide	23	150	NA	mg/kg					
Iron	55000	820000	NA	mg/kg	11300	10900	8060	11500	10700
Lead	400	800	120	mg/kg	22.2 JL	13.8 JL	71.3	13.9	13.5
Manganese	1800	26000	220	mg/kg	<u>1590</u> JK	<u>833</u> JK	<u>600</u>	<u>548</u>	<u>686</u>
Mercury	11	46	0.1	mg/kg	<u>0.124</u>	0.0276	<u>0.813</u>	0.033	0.0325
Nickel	1500	22000	38	mg/kg	21.8 JL	16.7 JL	18.3	14.4	15.1
Selenium	390	5800	0.52	mg/kg	<u>0.951</u> JQL	<u>0.819</u> JQL	<u>1.15</u> UJL	<u>0.552</u> JQL	<u>0.61</u> JQL
Silver	390	5800	560	mg/kg	1.08 U	1.08 U	1.15 U	1.12 U	1.14 U
Thallium	0.78	12	1	mg/kg	0.195 JQL	<i>1.08</i> UJL	<i>1.15</i> U	<i>1.12</i> U	<i>1.14</i> U
Vanadium	390	5800	2	mg/kg	<u>40.4</u> JL	<u>37</u> JL	<u>23.3</u> JH	<u>35.6</u> JH	<u>34.5</u> JH
Zinc	23000	350000	120	mg/kg	45.6 JL	33.5 JL	73.9 JH	35.8 JH	33 JH
NOTES: Bold = Exceedances of Residential Human Screening Values. <i>Bold Italic</i> = Exceedances of Industrial Human Health Screening Values. <u>Underlined</u> = Exceedances of Ecological Screening Values. *Ecological screening level for chromium used for hexavalent chromium. J = Indicates that the concentration is an estimated value. U = Indicates the analyte was analyzed for but not detected. mg/kg = Milligrams per kilogram. NA = Not available. Qualifiers based on "Result_Qualifier" field of EPA provided sample databa Human Health Screening Values from: EPA. 2018. Region 9. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. San Francisco, CA: U. S. Environmental Protection Agency, Region 9; October 2018. Ecological Screening Values are protective of most sensitive receptor from: TCEQ. 2018. TCEQ’s Ecological Benchmark Tables. Soil Benchmarks. TCEQ publication RG-263b.									

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Chemical	Residential	Industrial	Ecological Screening Value	Sample ID:	J1-160920-SS-06-01	J1-160920-SS-18-01	J2-160921-SS-06-01	J2-160921-SS-18-01	J3-160921-SS-06-01
	Human	Human		Date:	9/20/2016	9/20/2016	9/20/2016	9/20/2016	9/21/2016
	Health	Health		Depth (in):	0-6	12-18	0-6	12-18	0-6
Value	Screening	Screening	Value	Units					
Aluminum	77000	1100000	NA	mg/kg	6300	6460	9670	8030	9290
Antimony	31	470	5	mg/kg	0.537 UJL	0.529 UJL	1.12 UJL	1.07 UJL	1.06 UJL
Arsenic	0.68	3	18	mg/kg	<i>4.44</i>	<i>5.69</i> JL	<i>7.41</i>	<i>7.28</i>	<i>7.33</i>
Barium	15000	220000	330	mg/kg	59.3	69.5	93.3	80.8	91.7
Beryllium	160	2300	10	mg/kg	0.469 JQ	0.536	0.653 JQ	0.554 JQ	0.673 JQ
Cadmium	NA	NA	32	mg/kg	0.245 JQL	0.19 JQL	0.378 JQ	0.213 JQ	0.385 JQ
Chromium	120000	1800000	0.4	mg/kg	<u>21.3</u> JL	<u>10.7</u> JL	<u>29.4</u> JH	<u>12.9</u> JH	<u>28.1</u> JH
Chromium, Hexavalent*	0.3	6.3	0.4	mg/kg	<u>2.29</u> UJL	<u>2.25</u> UJL	<u>2.31</u> UJL	<u>2.27</u> UJL	<u>2.31</u> UJL
Cobalt	23	350	13	mg/kg	5.12 JL	6.12 JL	8.09	7.08	7.84
Copper	3100	47000	70	mg/kg	7.85 JL	7.36 JL	12.8 JK	9.49 JK	12.6 JK
Cyanide	23	150	NA	mg/kg					
Iron	55000	820000	NA	mg/kg	7700	9310	12400	11400	12400
Lead	400	800	120	mg/kg	14.6 JL	11.1 JL	22.5	13.8	24.1
Manganese	1800	26000	220	mg/kg	<u>641</u> JK	<u>698</u> JK	<u>899</u>	<u>826</u>	<u>840</u>
Mercury	11	46	0.1	mg/kg	<u>0.161</u>	0.0381	<u>0.172</u>	0.0287	<u>0.162</u>
Nickel	1500	22000	38	mg/kg	12.7 JL	13.7 JL	19.4	16.8	19.4
Selenium	390	5800	0.52	mg/kg	<u>0.745</u> JL	<u>0.882</u> JL	<u>1.1</u> UB	<u>0.927</u> UB	<u>1.3</u> UB
Silver	390	5800	560	mg/kg	0.537 U	0.529 U	1.12 U	1.07 U	1.06 U
Thallium	0.78	12	1	mg/kg	0.0998 JQL	0.125 JQL	<u>1.12</u> U	<u>1.07</u> U	<u>1.06</u> U
Vanadium	390	5800	2	mg/kg	<u>26.2</u> JL	<u>31.9</u> JL	<u>41.8</u> JH	<u>37.2</u> JH	<u>41</u> JH
Zinc	23000	350000	120	mg/kg	31.2 JL	26.4 JL	51.9 JH	34.1 JH	55.1 JH
NOTES: Bold = Exceedances of Residential Human Screening Values. <i>Bold Italic</i> = Exceedances of Industrial Human Health Screening Values. <u>Underlined</u> = Exceedances of Ecological Screening Values. *Ecological screening level for chromium used for hexavalent chromium. J = Indicates that the concentration is an estimated value. U = Indicates the analyte was analyzed for but not detected. mg/kg = Milligrams per kilogram. NA = Not available. Qualifiers based on "Result_Qualifier" field of EPA provided sample databa Human Health Screening Values from: EPA. 2018. Region 9. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. San Francisco, CA: U. S. Environmental Protection Agency, Region 9; October 2018. Ecological Screening Values are protective of most sensitive receptor from: TCEQ. 2018. TCEQ’s Ecological Benchmark Tables. Soil Benchmarks. TCEQ publication RG-263b.									

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	Residential Human Health Screening Value	Industrial Human Health Screening Value	Ecological Screening Value	Sample ID: Date: Depth (in): Units	J3-160921-SS-18-01 9/21/2016 12-18	J4-160921-SS-06-01 9/21/2016 0-6	J4-160921-SS-18-01 9/21/2016 12-18	J5-160921-SS-06-01 9/21/2016 0-6	J5-160921-SS-18-01 9/21/2016 12-18
Chemical									
Aluminum	77000	1100000	NA	mg/kg	8910	9110	10200	9800	9150
Antimony	31	470	5	mg/kg	1.1 UJL	1.07 UJL	1.1 UJL	1.1 UJL	1.09 UJL
Arsenic	0.68	3	18	mg/kg	<i>8.84</i>	<i>6.74</i>	<i>8.02</i>	<i>6.78</i>	<i>7.02</i>
Barium	15000	220000	330	mg/kg	85.9	84.5	79.6	86.7	80
Beryllium	160	2300	10	mg/kg	0.613 JQ	0.627 JQ	0.591 JQ	0.66 JQ	0.569 JQ
Cadmium	NA	NA	32	mg/kg	0.234 JQ	0.344 JQ	0.22 JQ	0.371 JQ	0.25 JQ
Chromium	120000	1800000	0.4	mg/kg	<u>14.1</u> JH	<u>25.6</u> JH	<u>13</u> JH	<u>26.2</u> JH	<u>15.3</u> JH
Chromium, Hexavalent*	0.3	6.3	0.4	mg/kg	<u>2.27</u> UJL	<u>2.3</u> UJL	<u>2.26</u> UJL	<u>2.3</u> UJL	<u>2.3</u> UJL
Cobalt	23	350	13	mg/kg	7.76	7.16	7.47	7.13	6.96
Copper	3100	47000	70	mg/kg	23.4 JK	11.9 JK	9.51 JK	12.6 JK	10.2 JK
Cyanide	23	150	NA	mg/kg					
Iron	55000	820000	NA	mg/kg	15100	11200	11900	11300	11400
Lead	400	800	120	mg/kg	<u>293</u>	22.5	14.5	23.6	16.5
Manganese	1800	26000	220	mg/kg	<u>887</u>	<u>834</u>	<u>1080</u>	<u>879</u>	<u>827</u>
Mercury	11	46	0.1	mg/kg	0.0329	<u>0.168</u>	0.0357	<u>0.201</u>	0.0885
Nickel	1500	22000	38	mg/kg	20.1	17.9	17.3	18.4	17.2
Selenium	390	5800	0.52	mg/kg	<u>1.16</u> UB	<u>1.31</u> UB	<u>1.19</u> UB	<u>1.5</u> UB	<u>1.15</u>
Silver	390	5800	560	mg/kg	1.1 U	1.07 U	1.1 U	1.1 U	1.09 U
Thallium	0.78	12	1	mg/kg	<u>1.1</u> U	<u>1.07</u> U	<u>1.1</u> U	0.191 JQ	<u>1.09</u> U
Vanadium	390	5800	2	mg/kg	<u>39</u> JH	<u>37</u> JH	<u>37.9</u> JH	<u>36.5</u> JH	<u>38.3</u> JH
Zinc	23000	350000	120	mg/kg	37.1 JH	49.3 JH	36.2 JH	49.8 JH	36.9 JH
NOTES: Bold = Exceedances of Residential Human Screening Values. <i>Bold Italic</i> = Exceedances of Industrial Human Health Screening Values. <u>Underlined</u> = Exceedances of Ecological Screening Values. *Ecological screening level for chromium used for hexavalent chromium. J = Indicates that the concentration is an estimated value. U = Indicates the analyte was analyzed for but not detected. mg/kg = Milligrams per kilogram. NA = Not available. Qualifiers based on "Result_Qualifier" field of EPA provided sample databa Human Health Screening Values from: EPA. 2018. Region 9. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. San Francisco, CA: U. S. Environmental Protection Agency, Region 9; October 2018. Ecological Screening Values are protective of most sensitive receptor from: TCEQ. 2018. TCEQ’s Ecological Benchmark Tables. Soil Benchmarks. TCEQ publication RG-263b.									

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	Residential Human Health Screening Value	Industrial Human Health Screening Value	Ecological Screening Value	Sample ID: Date: Depth (in): Units	J6-160921-SS-06-01 9/21/2016 0-6	J6-160921-SS-18-01 9/21/2016 12-18	J8-160921-SS-06-01 9/21/2016 0-6	J8-160921-SS-18-01 9/21/2016 12-18	J9-160921-SS-06-01 9/21/2016 0-6
Chemical									
Aluminum	77000	1100000	NA	mg/kg	7700	7920	10000	8630	14100
Antimony	31	470	5	mg/kg	1.11 UJL	1.09 UJL	1.15 UJL	1.09 UJL	1.16 UJL
Arsenic	0.68	3	18	mg/kg	<i>5.13</i>	<i>6.95</i>	<i>5.49</i>	<i>5.89</i>	<i>5.29</i>
Barium	15000	220000	330	mg/kg	67	67.7	71.1	66.5	78.3
Beryllium	160	2300	10	mg/kg	0.47 JQ	0.461 JQ	0.55 JQ	0.516 JQ	0.567 JQ
Cadmium	NA	NA	32	mg/kg	0.45 JQL	0.212 JQL	0.637 JQL	0.192 JQL	0.627 JQL
Chromium	120000	1800000	0.4	mg/kg	<u>35.7</u>	<u>10.9</u>	<u>54.8</u>	<u>11.7</u>	<u>44.1</u>
Chromium, Hexavalent*	0.3	6.3	0.4	mg/kg	<u>2.39</u> UJL	<u>2.27</u> UJL	<u>2.38</u> UJL	<u>2.37</u> UJL	<u>2.4</u> UJL
Cobalt	23	350	13	mg/kg	5.23	5.96	5.47	5.76	5.52
Copper	3100	47000	70	mg/kg	11.2 JL	6.9 JL	12.6 JL	8.53 JL	12 JL
Cyanide	23	150	NA	mg/kg					
Iron	55000	820000	NA	mg/kg	8550	9690	9730	9830	9540
Lead	400	800	120	mg/kg	25.2	10.6	34.1	12.1	29.2
Manganese	1800	26000	220	mg/kg	<u>606</u>	<u>922</u>	<u>631</u>	<u>683</u>	<u>895</u>
Mercury	11	46	0.1	mg/kg	<u>0.34</u>	0.0221	<u>0.584</u>	0.0384	<u>0.247</u>
Nickel	1500	22000	38	mg/kg	14.6	12.5	16.7	14.1	15.6
Selenium	390	5800	0.52	mg/kg	<u>0.527</u> JQL	0.481 JQL	<u>0.589</u> JQL	<u>0.554</u> JQL	<u>0.75</u> JQL
Silver	390	5800	560	mg/kg	1.11 U	1.09 U	1.15 U	1.09 U	1.16 U
Thallium	0.78	12	1	mg/kg	<u>1.11</u> U	<u>1.09</u> U	<u>1.15</u> U	<u>1.09</u> U	0.2 JQ
Vanadium	390	5800	2	mg/kg	<u>27.6</u> JH	<u>29.8</u> JH	<u>30.3</u> JH	<u>31.6</u> JH	<u>30.1</u> JH
Zinc	23000	350000	120	mg/kg	46.3 JH	25.8 JH	48.2 JH	30.9 JH	49.5 JH
NOTES: Bold = Exceedances of Residential Human Screening Values. <i>Bold Italic</i> = Exceedances of Industrial Human Health Screening Values. <u>Underlined</u> = Exceedances of Ecological Screening Values. *Ecological screening level for chromium used for hexavalent chromium. J = Indicates that the concentration is an estimated value. U = Indicates the analyte was analyzed for but not detected. mg/kg = Milligrams per kilogram. NA = Not available. Qualifiers based on "Result_Qualifier" field of EPA provided sample databa Human Health Screening Values from: EPA. 2018. Region 9. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. San Francisco, CA: U. S. Environmental Protection Agency, Region 9; October 2018. Ecological Screening Values are protective of most sensitive receptor from: TCEQ. 2018. TCEQ’s Ecological Benchmark Tables. Soil Benchmarks. TCEQ publication RG-263b.									

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Chemical	Residential	Industrial	Ecological Screening Value	Sample ID:	J9-160921-SS-18-01	LPW01-E6-SS-160413-01	LPW01-E6-SS-160413-02	LPW02-F7-SS-160413-01
	Human	Human		Date:	9/21/2016	4/13/2016	4/13/2016	4/13/2016
	Health	Health		Depth (in):	12-18	0-3	0-3	0-3
Value	Screening	Screening	Value	Units				
Aluminum	77000	1100000	NA	mg/kg	9170	4870	5290	13800
Antimony	31	470	5	mg/kg	1.09 UJL	<u>94.7</u> JLD	<u>102</u> JL	<u>6.31</u> UJ
Arsenic	0.68	3	18	mg/kg	<u>5.11</u>	<u>6.46</u> JLQD	<u>7.09</u> JLQ	<u>9.25</u> JLQ
Barium	15000	220000	330	mg/kg	65.3	<u>373</u>	<u>558</u>	143
Beryllium	160	2300	10	mg/kg	0.552 JQ	0.368	0.481 JQ	0.952 JQ
Cadmium	NA	NA	32	mg/kg	0.196 JQL	<u>80.3</u> JK	<u>64.8</u> JK	<u>172</u> JK
Chromium	120000	1800000	0.4	mg/kg	<u>14.3</u>	<u>9530</u> JKD	<u>13000</u> JK	<u>3670</u> JK
Chromium, Hexavalent*	0.3	6.3	0.4	mg/kg	<u>2.37</u> UJL	<u>2130</u>	<u>1010</u>	<u>130</u>
Cobalt	23	350	13	mg/kg	5.14	12.7	12.4	11 JQ
Copper	3100	47000	70	mg/kg	8.3 JL	<u>533</u> JK	<u>510</u> JK	<u>270</u> JK
Cyanide	23	150	NA	mg/kg				
Iron	55000	820000	NA	mg/kg	9450	29800	35800	19600
Lead	400	800	120	mg/kg	12.4	<u>19300</u> JKD	<u>24500</u> JK	<u>1760</u> JK
Manganese	1800	26000	220	mg/kg	<u>584</u>	<u>515</u>	<u>648</u>	<u>976</u>
Mercury	11	46	0.1	mg/kg	0.0188	<u>2.15</u> UJ	<u>97.8</u> JK	<u>22.4</u> JKD
Nickel	1500	22000	38	mg/kg	13.4	<u>529</u> JL	<u>932</u> JL	<u>233</u> JL
Selenium	390	5800	0.52	mg/kg	<u>0.623</u> JQL	0.307 UJ	<u>7.09</u> UJ	<u>7.04</u> UJ
Silver	390	5800	560	mg/kg	1.09 U	5.75	7.33 JQ	3.24 U
Thallium	0.78	12	1	mg/kg	<u>1.09</u> U	<u>3.28</u> UD	<u>6.66</u> U	<u>7.53</u> U
Vanadium	390	5800	2	mg/kg	<u>29.2</u> JH	<u>16.3</u> JH	<u>17.8</u> JH	<u>43.2</u> JH
Zinc	23000	350000	120	mg/kg	31.8 JH	<u>396</u> D	<u>404</u>	<u>379</u>
NOTES: Bold = Exceedances of Residential Human Screening Values. Bold Italic = Exceedances of Industrial Human Health Screening Values. <u>Underlined</u> = Exceedances of Ecological Screening Values. *Ecological screening level for chromium used for hexavalent chromium. J = Indicates that the concentration is an estimated value. U = Indicates the analyte was analyzed for but not detected. mg/kg = Milligrams per kilogram. NA = Not available. Qualifiers based on "Result_Qualifier" field of EPA provided sample databa Human Health Screening Values from: EPA. 2018. Region 9. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. San Francisco, CA: U. S. Environmental Protection Agency, Region 9; October 2018. Ecological Screening Values are protective of most sensitive receptor from: TCEQ. 2018. TCEQ's Ecological Benchmark Tables. Soil Benchmarks. TCEQ publication RG-263b.								

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Chemical	Residential	Industrial	Ecological Screening Value	Sample ID:	LPW03-D5-SS-160413-01	LPW04-E2-SS-160413-01	LPW05-G3-SS-160413-01
	Human	Human		Date:	4/13/2016	4/13/2016	4/13/2016
	Health	Health		Depth (in):	0-3	0-3	0-3
Value	Screening	Screening	Value	Units			
Aluminum	77000	1100000	NA	mg/kg	5260	12400	11100
Antimony	31	470	5	mg/kg	4.62 UJ	<u>5.73</u> UJ	<u>5.42</u> UJ
Arsenic	0.68	3	18	mg/kg	<i>4.34</i> UJ	<i>6.79</i> JLQ	<i>8.29</i> JLQ
Barium	15000	220000	330	mg/kg	82.9	105	108
Beryllium	160	2300	10	mg/kg	0.697 JQ	0.988 JQ	1.17 JQ
Cadmium	NA	NA	32	mg/kg	<u>48.8</u> JK	2.47 JKQ	<u>53.1</u> JK
Chromium	120000	1800000	0.4	mg/kg	<u>1210</u> JK	<u>165</u> JK	<u>8330</u> JK
Chromium, Hexavalent*	0.3	6.3	0.4	mg/kg	<i>54.5</i>	<i>2.72</i> U	<i>267</i>
Cobalt	23	350	13	mg/kg	6.27 JQ	7.78 JQ	11 JQ
Copper	3100	47000	70	mg/kg	<u>1930</u> JK	23.1 JK	<u>381</u> JK
Cyanide	23	150	NA	mg/kg			
Iron	55000	820000	NA	mg/kg	19000	13500	22900
Lead	400	800	120	mg/kg	<u>973</u> JK	54.5 JK	<i>854</i> JK
Manganese	1800	26000	220	mg/kg	<u>617</u>	<u>869</u>	<u>875</u>
Mercury	11	46	0.1	mg/kg	<u>5.86</u> JKD	<u>2.32</u> JKD	<i>35</i> JKD
Nickel	1500	22000	38	mg/kg	<u>97.4</u> JL	22.1 JLQ	<u>1040</u> JL
Selenium	390	5800	0.52	mg/kg	<u>5.15</u> UJ	<u>6.72</u> UJ	<u>6.05</u> UJ
Silver	390	5800	560	mg/kg	2.37 U	2.94 U	2.78 U
Thallium	0.78	12	1	mg/kg	<i>5.51</i> U	<i>6.84</i> U	<i>6.47</i> U
Vanadium	390	5800	2	mg/kg	<u>17.7</u> JH	<u>37.7</u> JH	<u>38.9</u>
Zinc	23000	350000	120	mg/kg	<u>527</u>	70.1	<u>504</u>
NOTES: Bold = Exceedances of Residential Human Screening Values. <i>Bold Italic</i> = Exceedances of Industrial Human Health Screening Values. <u>Underlined</u> = Exceedances of Ecological Screening Values. *Ecological screening level for chromium used for hexavalent chromium. J = Indicates that the concentration is an estimated value. U = Indicates the analyte was analyzed for but not detected. mg/kg = Milligrams per kilogram. NA = Not available. Qualifiers based on "Result_Qualifier" field of EPA provided sample databa Human Health Screening Values from: EPA. 2018. Region 9. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. San Francisco, CA: U. S. Environmental Protection Agency, Region 9; October 2018. Ecological Screening Values are protective of most sensitive receptor from: TCEQ. 2018. TCEQ’s Ecological Benchmark Tables. Soil Benchmarks. TCEQ publication RG-263b.							

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Chemical	Residential Human Health Screening Value	Industrial Human Health Screening Value	Ecological Screening Value	Sample ID: Sample Date:	SE-01	SE-02	SE-03	SE-04	SE-05	SE-06	SE-07	SE-08
				Units	7/20/2016	7/20/2016	7/20/2016	7/20/2016	7/19/2016	7/21/2016	7/19/2016	7/21/2016
Beryllium	160	2300	NA	mg/kg	0.5 U	0.6	0.5 U	0.6	0.6	0.7	0.7	0.5
Cadmium	NA	NA	0.99	mg/kg	0.5	0.6	0.9	<u>1</u>	0.9	0.7	0.8	0.8
Chromium	120000	1800000	43.4	mg/kg	6.3	7.8	11.4	33.4	<u>87.3</u>	<u>61.4</u>	<u>83.4</u>	31.5
Copper	3100	47000	31.6	mg/kg	7.6	12.8	17.9	27.4	20.7	15.8	17.3	16.1
Cyanide	23	150	NA	mg/kg	0.67 U	0.11 U	0.63 U	0.84 U	0.93	0.18 U	0.73 U	0.1 U
Lead	400	800	35.8	mg/kg	26.8	30.3	<u>52.9</u>	<u>69.9</u>	<u>77.4</u>	<u>36.5</u> J+	<u>44</u>	<u>109</u>
Mercury	11	46	0.18	mg/kg	0.058 U	0.066 U	0.068 U	<u>0.214</u>	<u>0.271</u>	0.091	0.143	0.074
NOTES: Bold = Exceedances of Residential Human Health Screening Values. <i>Bold Italic</i> = Exceedances of Industrial Human Health Screening Values. <u>Underlined</u> = Exceedances of Ecological Screening Values. J = Indicates that the concentration is an estimated value. U = Indicates the analyte was analyzed for but not detected. mg/kg = Milligrams per kilogram. NA = Not available. Qualifiers based on "Result_Qualifier" field of EPA provided sample database. Human Health Screening Values from: EPA. 2018. Region 9. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. San Francisco, CA: U. S. Environmental Protection Agency, Region 9; October 2018. Ecological Screening Values are from: TCEQ. 2018. TCEQ’s Ecological Benchmark Tables. Sediment Benchmarks, Second-Effects Levels, and Benthic PCLs. TCEQ publication RG-263b.												

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Chemical	Residential Human Health Screening Value	Industrial Human Health Screening Value	Ecological Screening Value	Sample ID: Sample Date:	SE-09 7/21/2016	SE-10 7/19/2016	SE-11 7/18/2016	SE-12 7/18/2016	SE-13 7/18/2016	SE-14 7/21/2016	SE-15 7/21/2016
				Units							
Beryllium	160	2300	NA	mg/kg	0.7	0.7	0.6	0.5	0.6 U	0.5	0.6
Cadmium	NA	NA	0.99	mg/kg	0.9	0.8	0.5 U	0.6	0.6	0.8	0.7
Chromium	120000	1800000	43.4	mg/kg	19.5	38.3	3.5	6.5	6.8	28.6	18
Copper	3100	47000	31.6	mg/kg	21.9	14.7	6.6	6.5	7.4	14.7	18.4
Cyanide	23	150	NA	mg/kg	1.1 U	0.034 U	0.35 U	0.067 U	0.62	0.74 U	0.65 U
Lead	400	800	35.8	mg/kg	<u>70.6</u>	<u>107</u>	7.3 B	10 B	15.6 B	<u>131</u>	<u>61.5</u>
Mercury	11	46	0.18	mg/kg	0.085	0.117	0.056 U	0.055 U	0.063 U	0.098	0.086
NOTES: Bold = Exceedances of Residential Human Health Screening Values. <i>Bold Italic</i> = Exceedances of Industrial Human Health Screening Values. <u>Underlined</u> = Exceedances of Ecological Screening Values. J = Indicates that the concentration is an estimated value. U = Indicates the analyte was analyzed for but not detected. mg/kg = Milligrams per kilogram. NA = Not available. Qualifiers based on "Result_Qualifier" field of EPA provided sample database. Human Health Screening Values from: EPA. 2018. Region 9. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. San Francisco, CA: U. S. Environmental Protection Agency, Region 9; October 2018. Ecological Screening Values are from: TCEQ. 2018. TCEQ's Ecological Benchmark Tables. Sediment Benchmarks, Second-Effects Levels, and Benthic PCLs. TCEQ publication RG-263b.											

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Chemical	Resident Tapwater Value	Maximum Contaminant Level	Ecological Screening Value	Sample ID: Date:	SW-01 7/20/2016	SW-03 7/20/2016	SW-04 7/20/2016	SW-05 7/19/2016	SW-06 7/19/2016	SW-07 7/19/2016	SW-08 7/21/2016	SW-09 7/21/2016
				Unit								
Aluminum	20000	NA	87	ug/L	<u>100</u> U	4380	<u>23200</u>	<u>120</u>	<u>171</u>	<u>381</u>	<u>386</u>	<u>762</u>
Arsenic	0.052	10	150	ug/L	2 U	5.5	<i>17.6</i>	4.2	4	3.9	4.1	4
Barium	3800	2000	16000	ug/L	95.3 J	127 J	376 J	99.5 J	88.3 J	83.6 J	82.8 J	53.6 J
Chromium	22000	NA	42	ug/L	10 U	10 U	<u>51.3</u>	10 U	10 U	10 U	10 U	10 U
Copper	800	1300	5.24	ug/L	4 U	<u>6.1</u>	<u>41.2</u>	4 U	4 U	4 U	4 U	4 U
Cyanide	1.5	200	10.7	ug/L	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Iron	14000	NA	1000	ug/L	72.6	<u>4500</u>	<u>25400</u>	435	372	531	528	943
Lead	15	15	1.17	ug/L	<u>2</u> U	<u>15.6</u>	<u>139</u>	2.4 B	<u>2.5 B</u>	<u>3.7 B</u>	<u>3.3</u>	<u>6.2</u>
Manganese	430	NA	1310	ug/L	45.5 J	<u>820</u> J	<u>2730</u> J	334 J	262 J	265 J	<u>974</u> J	318 J
Mercury	0.63	2	1.3	ug/L	0.2 U	0.2 U	0.357	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	390	NA	28.93	ug/L	20 U	20 U	<u>42.6</u>	20 U	20 U	20 U	20 U	20 U
Vanadium	86	NA	20	ug/L	<u>20</u> U	<u>20</u> U	<u>75.9</u>	<u>20</u> U	<u>20</u> U	<u>20</u> U	<u>20</u> U	<u>20</u> U
Zinc	6000	NA	65.7	ug/L	20 U	29.4	<u>239</u>	20 U	20 U	20 U	20 U	20 U
<p>NOTES:</p> <p>Bold = Exceedances of Resident Tapwater Values.</p> <p><i>Bold Italic</i> = Exceedances of Maximum Contaminant Levels.</p> <p><u>Underlined</u> = Exceedances of Ecological Screening Values.</p> <p>J = Indicates that the concentration is an estimated value.</p> <p>U = Indicates the analyte was analyzed for but not detected.</p> <p>ug/L = Micrograms per liter.</p> <p>NA = Not available.</p> <p>Qualifiers based on "Result_Qualifier" field of EPA provided sample database.</p> <p>The surface water concentratons are based on total metals results.</p> <p>Resident Tapwater values and maximum contaminant levels from: EPA. 2018. Region 9. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. San Francisco, CA: U. S. Environmental Protection Agency, Region 9; October 2018.</p> <p>Ecological screening values are Freshwater Chronic Benchmarks from: TCEQ. 2018. TCEQ’s Ecological Benchmark Tables. Surface Water Benchmarks for Metals, Inorganics. TCEQ publication RG-263b.</p>												

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Chemical	Resident Tapwater Value	Maximum Contaminant Level	Ecological Screening Value	Sample ID: Date:	SW-11 7/18/2016	SW-12 7/18/2016	SW-13 7/18/2016	SW-14 7/21/2016	SW-15 7/21/2016
				Unit					
Aluminum	20000	NA	87	ug/L	<u>100</u> U	<u>324</u>	<u>1560</u>	<u>351</u>	<u>842</u>
Arsenic	0.052	10	150	ug/L	2	2 U	2.9	4.3	4.5
Barium	3800	2000	16000	ug/L	85.7 J	86.1 J	63.4 J	63.2 J	57.7 J
Chromium	22000	NA	42	ug/L	10 U	10 U	10 U	10 U	10 U
Copper	800	1300	5.24	ug/L	4 U	<u>13.9</u>	4 U	4 U	4 U
Cyanide	1.5	200	10.7	ug/L	10 U	10 U	10 U	10 U	10 U
Iron	14000	NA	1000	ug/L	434	439	<u>1870</u>	571	<u>1020</u>
Lead	15	15	1.17	ug/L	<u>2</u> U	<u>5.1</u> B	<u>3.4</u> B	<u>3.2</u>	<u>5.7</u>
Manganese	430	NA	1310	ug/L	257 J	205 J	144 J	359 J	399 J
Mercury	0.63	2	1.3	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	390	NA	28.93	ug/L	20 U	20 U	20 U	20 U	20 U
Vanadium	86	NA	20	ug/L	<u>20</u> U	<u>20</u> U	<u>20</u> U	<u>20</u> U	<u>20</u> U
Zinc	6000	NA	65.7	ug/L	20 U	20 U	20 U	20 U	20 U
NOTES: Bold = Exceedances of Resident Tapwater Values. <i>Bold Italic</i> = Exceedances of Maximum Contaminant Levels. <u>Underlined</u> = Exceedances of Ecological Screening Values. J = Indicates that the concentration is an estimated value. U = Indicates the analyte was analyzed for but not detected. ug/L = Micrograms per liter. NA = Not available. Qualifiers based on "Result_Qualifier" field of EPA provided sample database. The surface water concentratons are based on total metals results. Resident Tapwater values and maximum contaminant levels from: EPA. 2018. Region 9. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. San Francisco, CA: U. S. Environmental Protection Agency, Region 9; October 2018. Ecological screening values are Freshwater Chronic Benchmarks from: TCEQ. 2018. TCEQ’s Ecological Benchmark Tables. Surface Water Benchmarks for Metals, Inorganics. TCEQ publication RG-263b.									

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				Sample ID:	LPW01-AQ-160413-01	LPW02-AQ-160413-01	LPW02-AQ-160413-02	LPW03-AQ-160413-01
				Date:	4/13/2016	4/13/2016	4/13/2016	4/13/2016
Chemical	Residential Human Health Screening Value	Industrial Human Health Screening Value	Ecological Screening Value	Units				
Aluminum	77000	1100000	NA	mg/kg	604 F1	1520	1360	878
Antimony	31	470	5	mg/kg	<u>45.5</u> U F1	<u>85.3</u> U	4.46 U	<u>44.2</u> U
Arsenic	0.68	3	18	mg/kg	<u>21.4</u> U F1	<u>32.1</u> U	<u>41.9</u> U	<u>20.8</u> U
Barium	15000	220000	330	mg/kg	3.23	36.9	33.5	0.976
Beryllium	160	2300	10	mg/kg	0.284 U	0.213 U	0.279 U	0.381 J
Cadmium	NA	NA	32	mg/kg	7.48	28.1	24.5	12
Chromium	120000	1800000	0.4	mg/kg	105000 B	<u>296000</u> B	<u>264000</u> B	<u>133000</u> B
Chromium, Hexavalent	0.3	6.3	0.4	mg/kg	<u>198</u> U F1	<u>199</u> U	<u>195</u> U	<u>196</u> U
Cobalt	23	350	13	mg/kg	1.33 U	0.994 U	1.3 U	1.29 U
Copper	3100	47000	70	mg/kg	1600	<u>6690</u>	<u>5410</u>	<u>1970</u>
Iron	55000	820000	NA	mg/kg	7000	12300	11400	8290
Lead	400	800	120	mg/kg	2.52	<u>168</u>	<u>203</u>	2 U
Manganese	1800	26000	220	mg/kg	67.7 F1	120	107	82.2
Mercury	11	46	0.1	mg/kg	<u>1.25</u>	<u>8.16</u> J	<u>7.18</u> J	<u>60</u>
Nickel	1500	22000	38	mg/kg	54.8 F1	218	193	66.1
Selenium	390	5800	0.52	mg/kg	<u>5.08</u> U	<u>3.81</u> U	<u>4.98</u> U	<u>4.93</u> U
Silver	390	5800	560	mg/kg	0.117 U	1.75 U	0.114 U	0.113 U
Thallium	0.78	12	1	mg/kg	<u>5.43</u> U	<u>40.7</u> U	<u>53.3</u> U	<u>26.4</u> U
Vanadium	390	5800	2	mg/kg	<u>63.8</u> F1	<u>42.2</u>	<u>36.7</u>	<u>69.6</u>
Zinc	23000	350000	120	mg/kg	<u>169</u> F1	<u>726</u>	<u>635</u>	<u>215</u>
<p>NOTES:</p> <p>Bold = Exceedances of Residential Human Screening Values.</p> <p><i>Bold Italic</i> = Exceedances of Industrial Human Health Screening Values.</p> <p><u>Underlined</u> = Exceedances of Ecological Screening Values.</p> <p>*Ecological screening level for chromium used for hexavalent chromium.</p> <p>J = Indicates that the concentration is an estimated value.</p> <p>U = Indicates the analyte was analyzed for but not detected.</p> <p>mg/kg = Milligrams per kilogram.</p> <p>NA = Not available.</p> <p>Qualifiers based on "Result_Qualifier" field of EPA provided sample database.</p> <p>Human Health Screening Values from: EPA. 2018. Region 9. Regional Screening Levels (RSL) for Chemical Contaminants at Superfund Sites. San Francisco, CA: U. S. Environmental Protection Agency, Region 9; October 2018.</p> <p>Ecological Screening Values are protective of most sensitive receptor from: TCEQ. 2018. TCEQ's Ecological Benchmark Tables. Soil Benchmarks. TCEQ publication RG-263b.</p>								

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